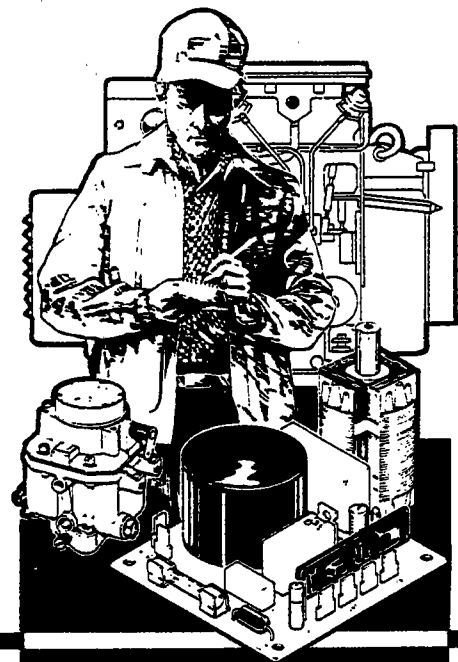


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Onan

Parts Manual DL4B GenSet



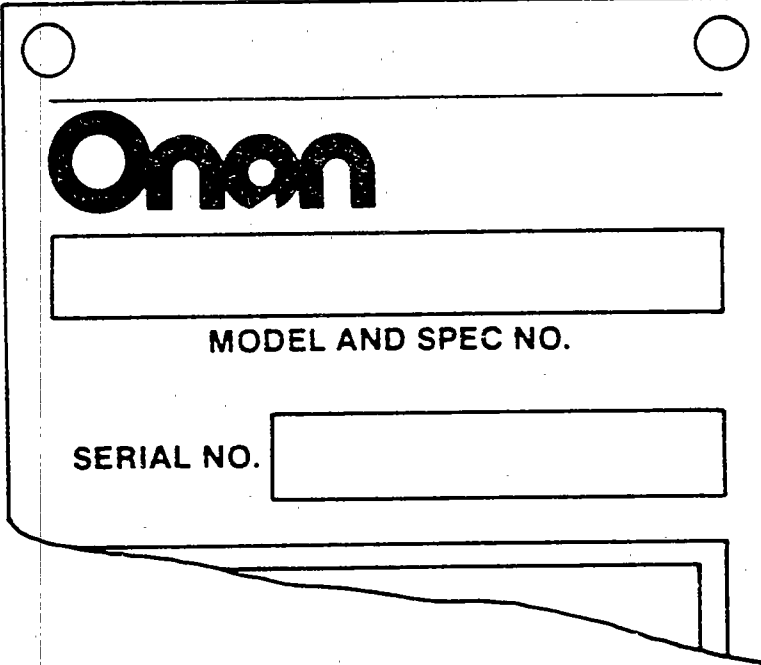
Onan Service Parts

934-0222
12-86 (SPEC A and B)
Replaces
5-84 (Spec A-B)
Printed in U.S.A

General Information

For parts or service, contact the dealer from whom you purchased this equipment or refer to your Nearest Authorized Onan Parts and Service Center.

To avoid errors or delay in filling your parts order, always give the MODEL, SPEC NO. and SERIAL NO. from the Onan nameplate.

A rectangular template for an Onan nameplate. It features the Onan logo at the top left. Below the logo is a large rectangular box for the model and specification number. Below that is a smaller rectangular box for the serial number. The bottom right corner of the template is folded over. Two small circles are located at the top left and top right corners of the template.

Onan

MODEL AND SPEC NO.

SERIAL NO.

M-1149

For handy reference, insert "YOUR" nameplate information in the spaces above.

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Introduction

This parts manual applies to the standard generator sets as listed below. Parts are arranged in groups of related items and each illustrated part is identified by a reference number corresponding to the same reference number in the parts list. Unless otherwise mentioned in the description, parts are interchangeable between models. All references in the parts description that pertain to specification letter differences for replacement parts are for the model listed on the identification label affixed to the generator set control. Throughout this manual left (non-accessory) and right (accessory) sides are determined by facing the rear or generator end of the set.

Set Data Table

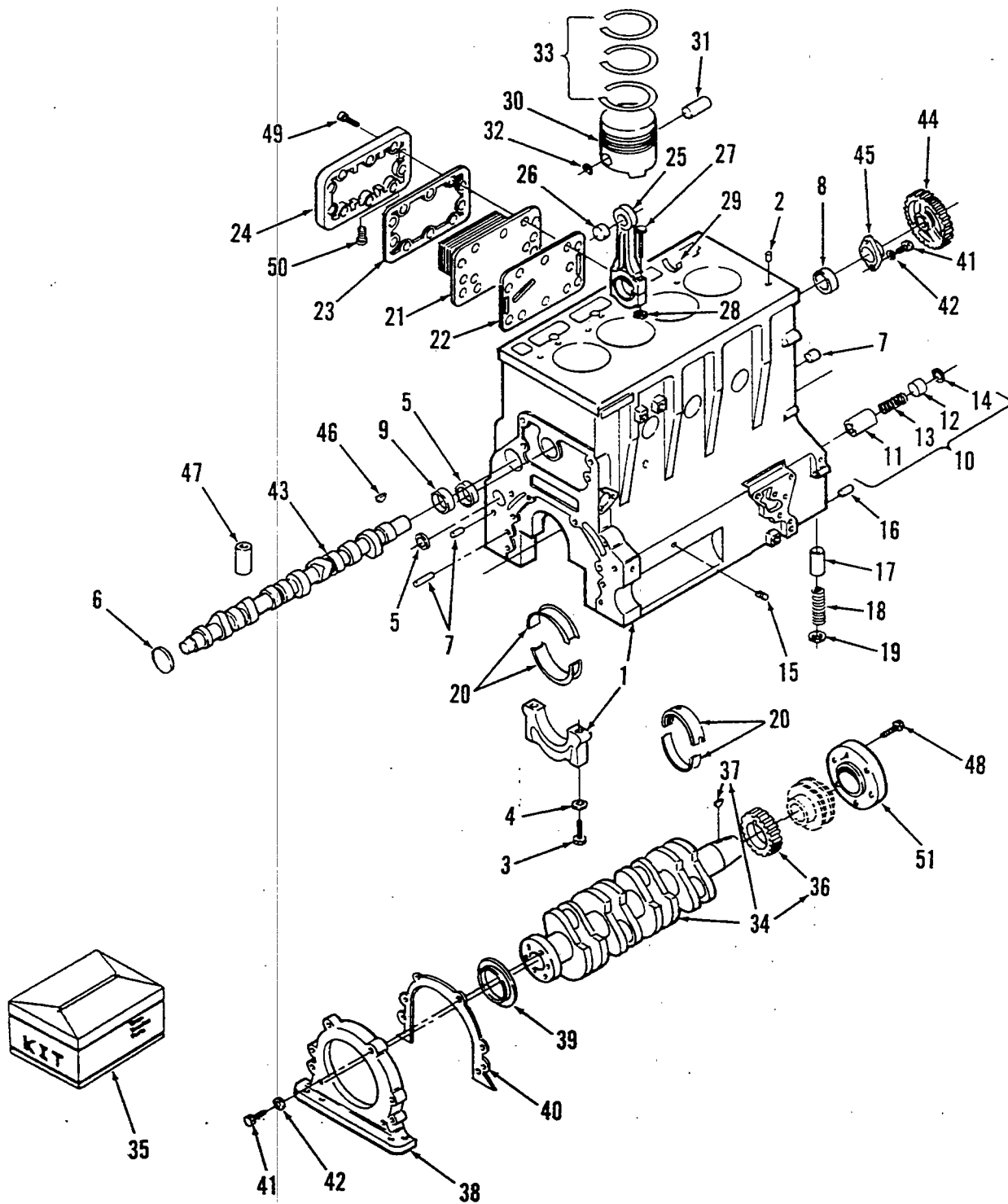
MODEL IDENTIFICATION	RATING	MODEL IDENTIFICATION	RATING
30.0 DL4B-*/#@	30,000 WATTS	33.0 DL4B-*/#@	33,000 WATTS

Electrical Data Table

*VOLTAGE CODES	VOLTS	HERTZ	WIRE	PHASE	NOTES
9XR	347/600	60	6	3	+
15R	120/208	60	12	3	
	120/240				
	127/220				
	139/240				
	240/416				+
	254/440				
	277/480				
515R	110/190	50	12	3	
	110/220				
	115/200				
	115/230				
	120/208				
	127/220				
	220/380				
	230/400				
	240/416				
	254/440				

- * - Voltage codes follow model letter designations.
- # - Specification number: Number 1 is standard, all others indicate variations.
- @ - Specification letter: Letter advances (A to B, B to C, etc.) with major manufacturing changes.
- + - These generators are reconnectable, refer to Operator's Manual for wiring data.

Cylinder Block

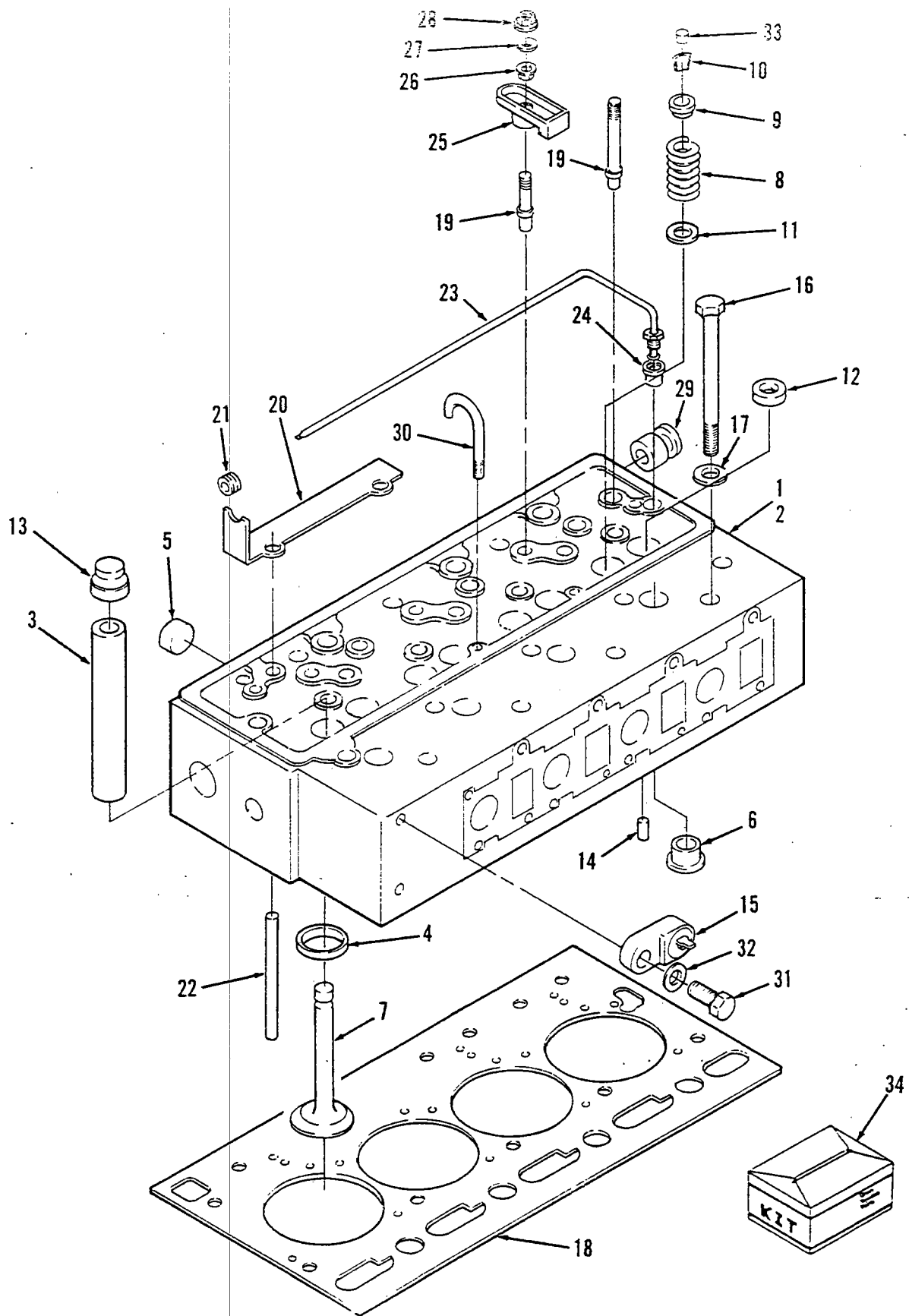


Cylinder Block

REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	110-3291	1	Block Assembly, Cylinder (Includes Parts Marked *)	23	102-0975	1	Gasket, Oil Cooler Cover
2	110-2978	2	*Pin, Cylinder Head Alignment	24	102-0980	1	Cover, Oil Cooler
3	720-1801	10	*Screw, Cap - Hex Head - Special	25	114-0313	4	Rod Assembly, Connecting (Includes Finished Bearing, Bolts and Nuts)
4	740-1801	10	*Washer, Flat - Special	26	114-0316	4	Bushing, Connecting Rod (Semi-Finished)
5			Plug, Cup	27	114-0315	8	Bolt, Connecting Rod
	517-0141	4	* 50.8 Stainless Steel	28	114-0318	8	Nut, Connecting Rod
	517-0144	2	* 12.7 MM Steel	29			Bearing, Connecting Rod (Half)
	517-0146	1	* 31.75 MM Stainless Steel		114-0319	8	Standard
	517-0250	1	54.37 MM Stainless Steel (Oversize)		114-0319-01	8	0.25 MM Undersize
6	517-0140	1	*Plug, Welch (57.15 MM) Steel		114-0319-02	8	0.50 MM Undersize
7			Pin, Alignment		114-0319-03	8	0.75 MM Undersize
	775-0074	2	* 8 MM x 20 MM	30			Piston and Pin Kit (Includes Retaining Rings)
	775-0089	2	* 10 MM x 20 MM		112-0201	4	Standard
	775-0078	2	* 8 MM x 40 MM		112-0202	4	0.25 MM Oversize
8	101-0511	1	*Bearing, Camshaft - Front		112-0203	4	0.50 MM Oversize
9	101-0471	4	*Bearing, Camshaft - Intermediate and Rear		112-0204	4	0.75 MM Oversize
10	123-1613	1	*Valve Assembly, Pressure Relief (Includes Parts Marked #)		112-0205	4	1.0 MM Oversize
11	123-1515	1	#Body, Relief Valve	31	112-0165	4	Pin, Piston
12	123-1514	1	#Piston, Relief Valve	32	518-0409	8	Ring, Retaining - Piston Pin
13	123-1508	1	#Spring, Relief Valve	33			Ring Kit, Piston
14	518-0410	1	#Ring, Retaining		113-0233	4	Standard
15	505-0274	4	*Plug, Pipe - Steel (1/8")		113-0234	4	0.25 MM Oversize
16	516-2102	1	*Pin, Regulator Valve Spring		113-0235	4	0.50 MM Oversize
17	123-1514	1	*Piston, Regulator Valve		113-0236	4	0.75 MM Oversize
18	123-1511	1	*Spring, Regulator Valve		113-0237	4	1.0 MM Oversize
19	740-1004	1	*Washer, Flat (M6)	34	104-1508	1	Crankshaft and Gear (Includes Key)
20			Bearing Kit, Main (Includes Upper and Lower Bearing Half)	35	168-0170	1	Kit, Gasket - Lower End
			Front	36	104-1138	1	Gear, Crankshaft
	101-0689	1	Standad	37	515-0245	1	Key - Crankshaft Gear
	101-0690	1	0.25 MM Undersize	38	101-0584	1	Plate, Rear Seal
	101-0691	1	0.50 MM Undersize	39	509-0203	1	Seal, Oil - Rear (Includes Wear Sleeve)
	101-0692	1	0.75 MM Undersize	40	101-0600	1	Gasket, Rear Seal Plate
			Center	41	718-1037	8	Screw, Cap - Hex Head (M8 x 25 MM)
	101-0681	1	Standard	42	740-1006	8	Washer, Flat (M8)
	101-0682	1	0.25 MM Undersize	43	105-0517	1	Camshaft
	101-0683	1	0.50 MM Undersize	44	105-0515	1	Gear, Camshaft
	101-0684	1	0.75 MM Undersize	45	105-0534	1	Retainer, Camshaft
			Intermediate (Except Center)	46	515-0245	1	Key - Camshaft Gear
	101-0685	2	Standard	47	115-0275	8	Tappet
	101-0686	2	0.25 MM Undersize	48	720-1054	6	Screw, Cap - Hex Head (M10 x 25 MM)
	101-0687	2	0.50 MM Undersize	49	725-1054	10	Screw, Socket Head (M8 x 40 MM)
	101-0688	2	0.75 MM Undersize	50	504-0028	1	Valve, Coolant Drain
			Rear	51	104-1551	1	Damper, Crankshaft Pulley
	101-0677	1	Standard				
	101-0678	1	0.25 MM Undersize				
	101-0679	1	0.50 MM Undersize				
	101-0680	1	0.75 MM Undersize				
21	102-1020	1	Cooler, Oil				
22	102-0973	1	Gasket, Oil Cooler				

* - Parts Included in 110-3291 Cylinder Block Assembly
- Parts Included in 123-1613 Pressure Relief Valve Assembly

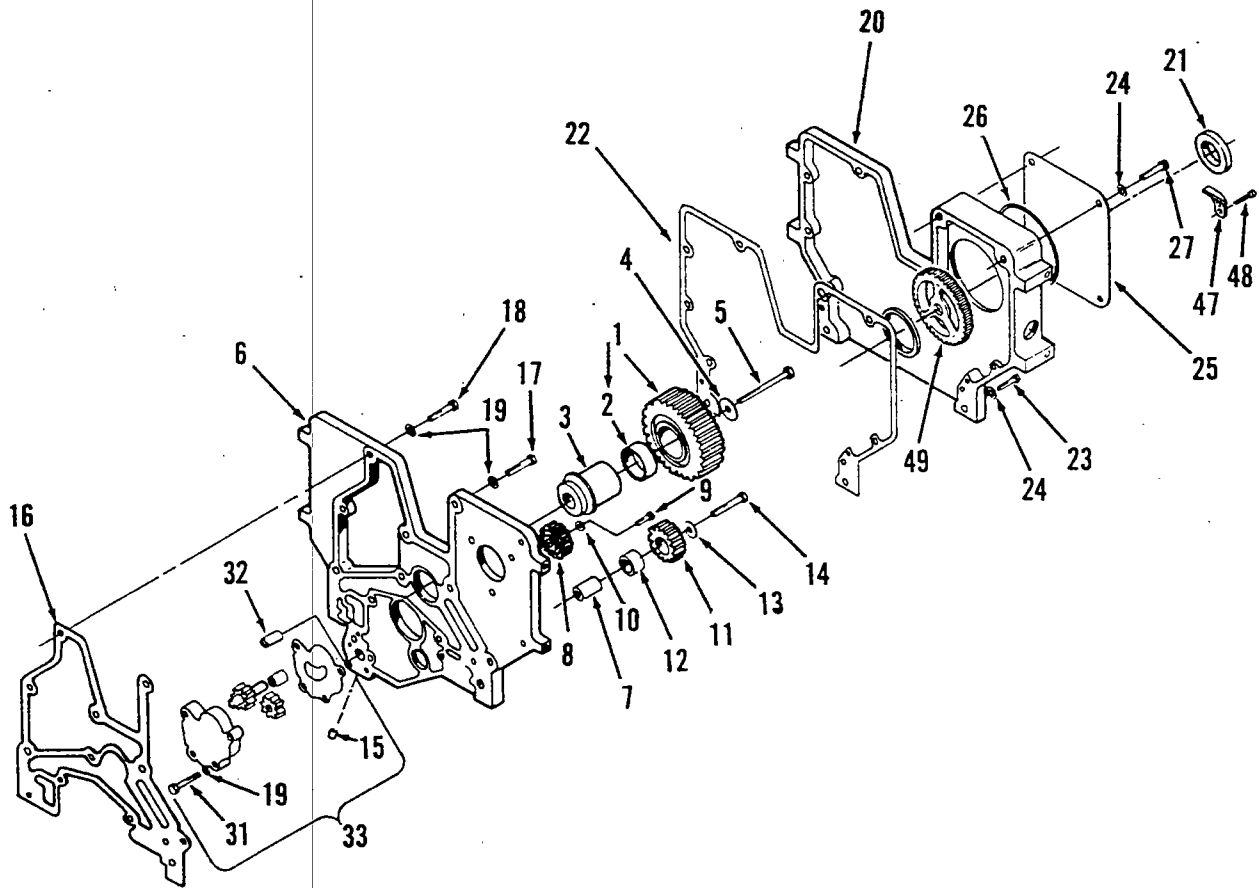
Cylinder Head



Cylinder Head

REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	110-3201	1	Head Assembly, Cylinder (Includes Guides, Seats, Cup Plugs, Valves, Springs, Breather Tubes, Spacers, Water Pump Adapter, Retainers, Collets, Wear Plates, Sleeves and Seals)	11			Plate, Valve Spring Wear
					110-2991	8	Spec A
					110-2991	4	Spec B (Exhaust)
				12	110-3432	4	Spacer, Valve Spring (Intake) Spec B
				13	110-3228	8	Seal Assembly, Valve Stem
2	110-3285	1	Head, Cylinder (Includes Seats, Sleeves, Spacers, Cup Plugs and Guides)	14	110-2979	4	Sleeve, Sealing
				15	309-0269	1	Switch, Low Engine
3			Guide, Valve (Semi-Finished)				Temperature (S5) Controls With 9 Indicator Lights
	110-3495	4	Intake (Standard)	16	720-1802	18	Screw, Cap - Hex Head (M12 x 130 MM)
	110-3496	4	Exhaust (Standard)	17	740-1801	14	Washer, Flat (M12)
4			Seat, Valve	18	110-3012	1	Gasket, Cylinder Head
			Intake (Not Original Equipment)	19			Stud, Rocker Arm
			Spec A		115-0204	4	Short
	110-2839	4	Spec B		115-0270	4	Long
			Standard	20	115-0313	2	Guide, Push Rod
	110-3226-01	4	.25 MM Oversize	21	508-0228	2	Grommet
	110-3226-02	4	.50 MM Oversize	22	115-0253	8	Pushrod
	110-3226-03	4	Exhaust	23	120-0919	1	Tube, Rocker Arm Oil
			Standard	24	502-0003	1	Connector, Inverted Male
	110-2781-01	4	.25 MM Oversize	25	115-0316	8	Arm, Rocker
	110-2781-02	4	.50 MM Oversize	26	115-0202	8	Ball, Rocker Arm
	110-2781-03	4	Plug, Cup	27	526-2119	8	Washer, Flat
5			38.1 MM	28	115-0315	8	Locknut, Rocker Arm
	517-0142	7	31.75 MM	29			Adapter, Water Pump
	517-0146	4	19.05 MM		110-3045	1	Standard
	517-0162	4	Plug, Hot (Swirl)		110-3490	1	0.5 MM Oversize
6	110-3039	4	Valve	30	123-1536	2	Tube, Breather
7			Intake	31	800-2085	1	Screw, Cap - Hex Head (M10 x 20 MM)
	110-3066	4	Exhaust				Washer, Flat (M10)
	110-2840	4	Spring, Valve	32	740-1008	1	Cap, Valve Stem (Not Used on Some Early Models)
8	110-3300	8	Retainer, Valve Spring	33	110-3245	8	Kit, Gasket - Valve Grind
9	110-3015	8	Collet, Valve Lock	34	168-0159	1	
10	110-2752	16					

Gearcase



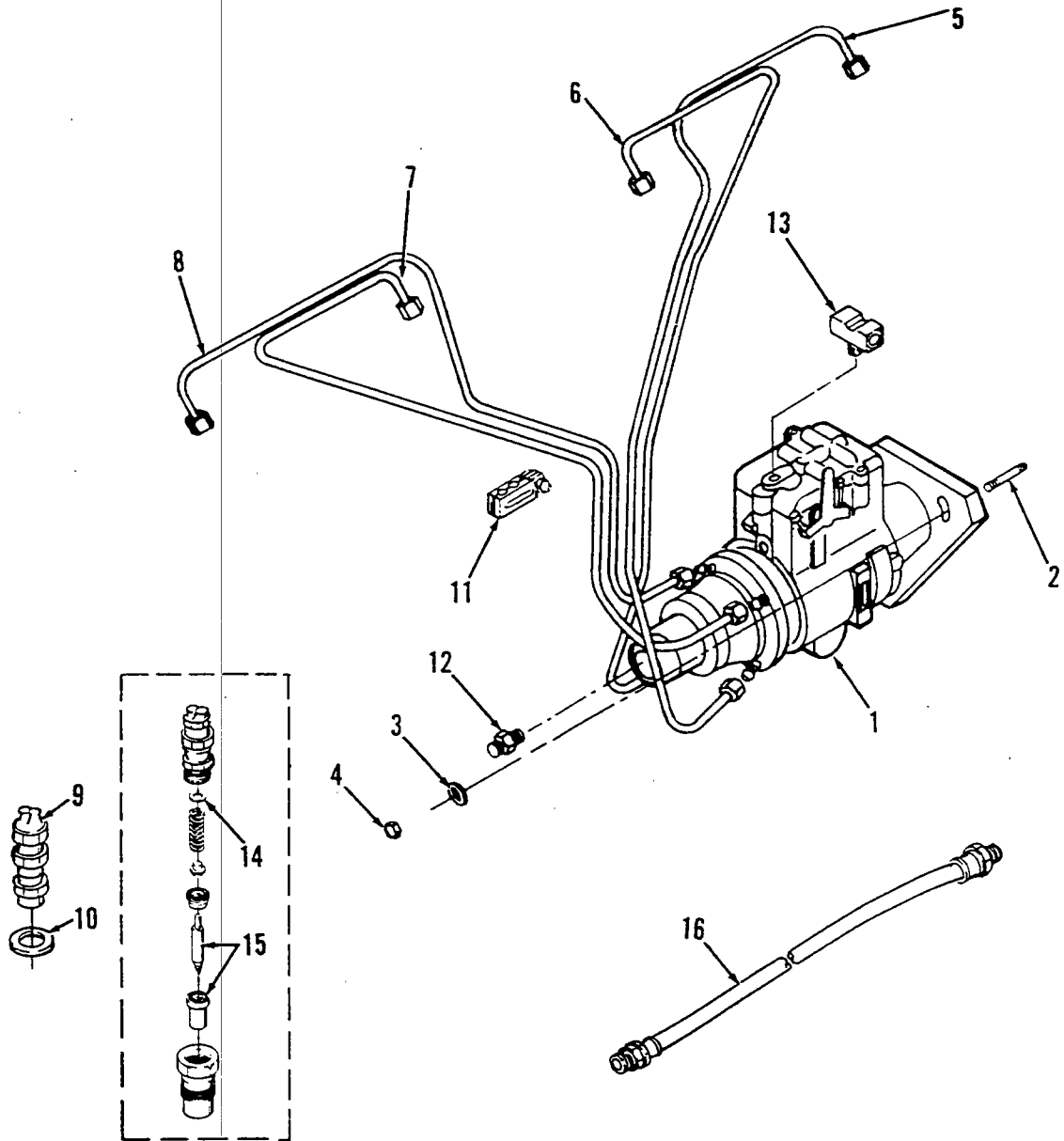
Gearcase

REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	105-0513	1	Gear, Idler (Includes Finished Bearing)	19	740-1006	7	Washer, Flat (M8)
2	105-0519	1	Bearing, Idler Gear (Semi-Finished)	20	103-0746	1	Gearcase (Includes Oil Seal and Oil Fill Tube)
3	105-0508	1	Shaft, Idler Gear	21	509-0191	1	Seal, Oil (Includes Wear Sleeve)
4	526-2127	1	Washer, Flat (M10)	22	103-0731	1	Gasket, Gearcase
5	718-1064	1	Screw, Cap - Hex Head (M10 x 75 MM)	23	718-1046	2	Screw, Cap - Hex Head M8 x 70 MM
6	103-0716	1	Backplate, Gearcase		718-1043	5	M8 x 55 MM
7	120-0983	1	Shaft, Oil Pump Idler Gear	24	740-1006	4	Washer, Flat M8
8	120-0885	1	Gear, Oil Pump Drive		740-1010	4	M12
9	718-1035	1	Screw, Cap - Hex Head (M8 x 16 MM)	25	103-0735	1	Cover, Injection Pump Gear
10	526-2106	1	Washer, Flat	26	509-0263	1	Seal, O-Ring
11	120-1063	1	Gear, Oil Pump Idler (Includes Finished Bearing)	27	718-1048	1	Screw, Cap - Hex Head M8 x 80 MM
12	120-1041	1	Bearing, Oil Pump Idler Gear (Semi-Finished)		718-1044	2	M8 x 60 MM
13	526-2107	1	Washer, Flat		718-1036	1	M8 x 20 MM
14	718-1035	1	Screw, Cap - Hex Head (M8 x 16 MM)	31	718-1041	2	Screw, Cap - Hex Head (M8 x 45 MM)
15	725-1802	1	Screw, Hex Socket Set (M16 x 16 MM)	32	120-0979	1	Bearing, Oil Pump Drive Shaft
16	103-0733	1	Gasket, Gearcase Backplate	33	120-1015	1	Pump Kit, Oil (Includes Drive Shaft Bearing)
17	718-1037	1	Screw, Cap - Hex Head M8 x 25 MM	47	103-0750	1	Plate, Timing
	718-1039	1	M8 x 35 MM	48	815-0578	2	Screw, Cap - Hex Head (M6 x 12.5 MM)
18	725-1801	2	Screw, Low Socket Head Cap (M8 x 16 MM)	49	147-0427	1	Gear, Injection Pump

This diagram illustrates the assembly of a mechanical device, likely a pump or actuator, with various components labeled 1 through 18. The main assembly consists of a motor (1) mounted on a base plate (4). A bracket (5) is attached to the motor's output shaft, which is connected to a long rod (6). The rod is equipped with a handle (10) at one end and a coupling (9) at the other. A cable (17) is connected to a terminal block (11) on the side of the motor. The terminal block has multiple terminals, some of which are connected to a small electronic module (16) and a sensor or switch (15). The sensor is connected to a cable (14) that leads to a control unit (13). The control unit has several terminals and is connected to a power source (12). The entire assembly is secured with various screws (2, 3, 7, 12, 13) and nuts (8).

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
11	151-0605	1	Control, Governor (A12)
12	813-0103	5	Screw, Machine - Round Head (#10-32 x 3/4")
13	850-0030	5	Washer, Lock - Spring (#10)
14	338-1705	1	Harness, Wiring - Includes Relay
15	307-1886	1	Relay
16	320-0540	1	Breaker, Circuit - 15 Amp (CB13) Includes Mounting Nuts
17	338-1765-01	1	Cable, Magnetic Pickup (60")
18	151-0603-02	1	Sensor, Magnetic Speed

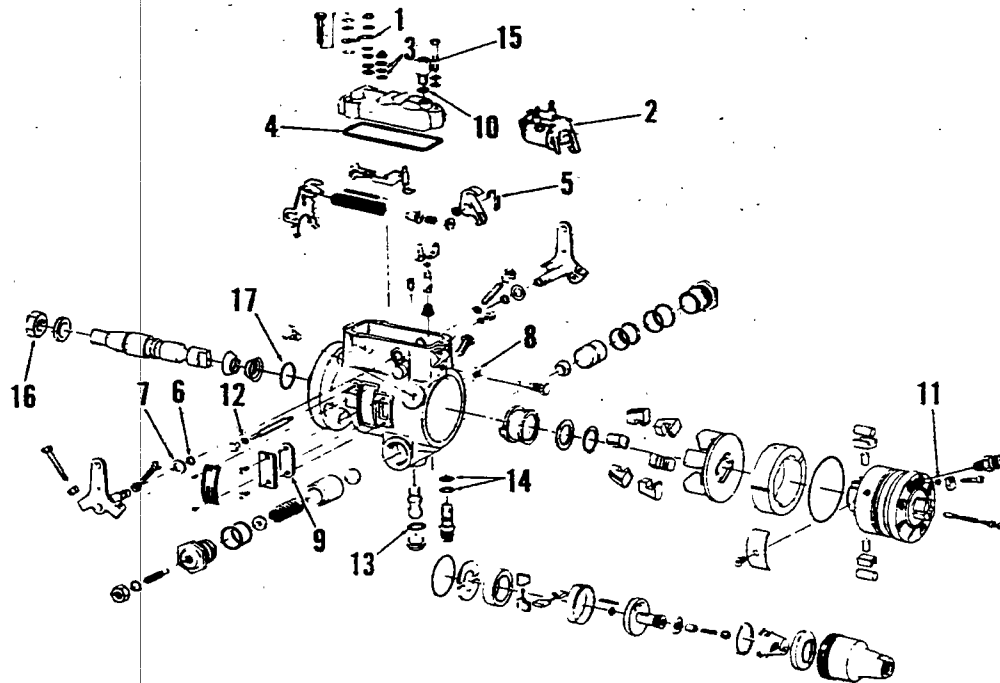
Fuel Injection



Fuel Injection

REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	147-0462-08	1	Pump, Fuel Injection (See Separate Page for Components)	14			Washer, Injection Nozzle Shim
2	520-2403	3	Stud, Injection Pump (M8)	147-0617	As Req.	0.80 MM	
3	526-2106	3	Washer, Flat (M8)	147-0618	As Req.	0.84 MM	
4	750-1006	3	Nut, Hex (M8)	147-0619	As Req.	0.88 MM	
5	147-0675	1	Line, Fuel Injection (No. 1)	147-0620	As Req.	0.92 MM	
6	147-0676	1	Line, Fuel Injection (No. 2)	147-0621	As Req.	0.96 MM	
7	147-0677	1	Line, Fuel Injection (No. 3)	147-0622	As Req.	1.00 MM	
8	147-0678	1	Line, Fuel Injection (No. 4)	147-0623	As Req.	1.04 MM	
9	147-0562	4	Injector, Fuel (Includes Seal)	147-0624	As Req.	1.08 MM	
10	147-0436	4	Seal, Injector	147-0625	As Req.	1.12 MM	
11			Clamp, Fuel Line (Use began during later portion of Spec A)	147-0626	As Req.	1.16 MM	
	147-0680	2	Clamps Two Lines	147-0627	As Req.	1.20 MM	
	147-0679	1	Clamps Four Lines	147-0628	As Req.	1.24 MM	
12	502-0733	1	Connector	147-0629	As Req.	1.28 MM	
13	502-0057	1	Tee, Pipe - Special	147-0630	As Req.	1.32 MM	
				147-0631	As Req.	1.36 MM	
				147-0632	As Req.	1.40 MM	
				147-0633	As Req.	1.44 MM	
				147-0634	As Req.	1.48 MM	
				147-0635	As Req.	1.52 MM	
				147-0636	As Req.	1.56 MM	
				147-0637	As Req.	1.60 MM	
				147-0638	As Req.	1.64 MM	
				147-0639	As Req.	1.68 MM	
				147-0640	As Req.	1.72 MM	
				147-0641	As Req.	1.76 MM	
				147-0642	As Req.	1.80 MM	
				147-0643	As Req.	1.84 MM	
				147-0644	As Req.	1.88 MM	
				147-0645	As Req.	1.92 MM	
				147-0646	As Req.	1.96 MM	
				15	147-0647	4	Tip, Nozzle
				16	501-0094	1	Line, Flexible Fuel - 60" (Fuel Return)

Fuel Injection Pump Components

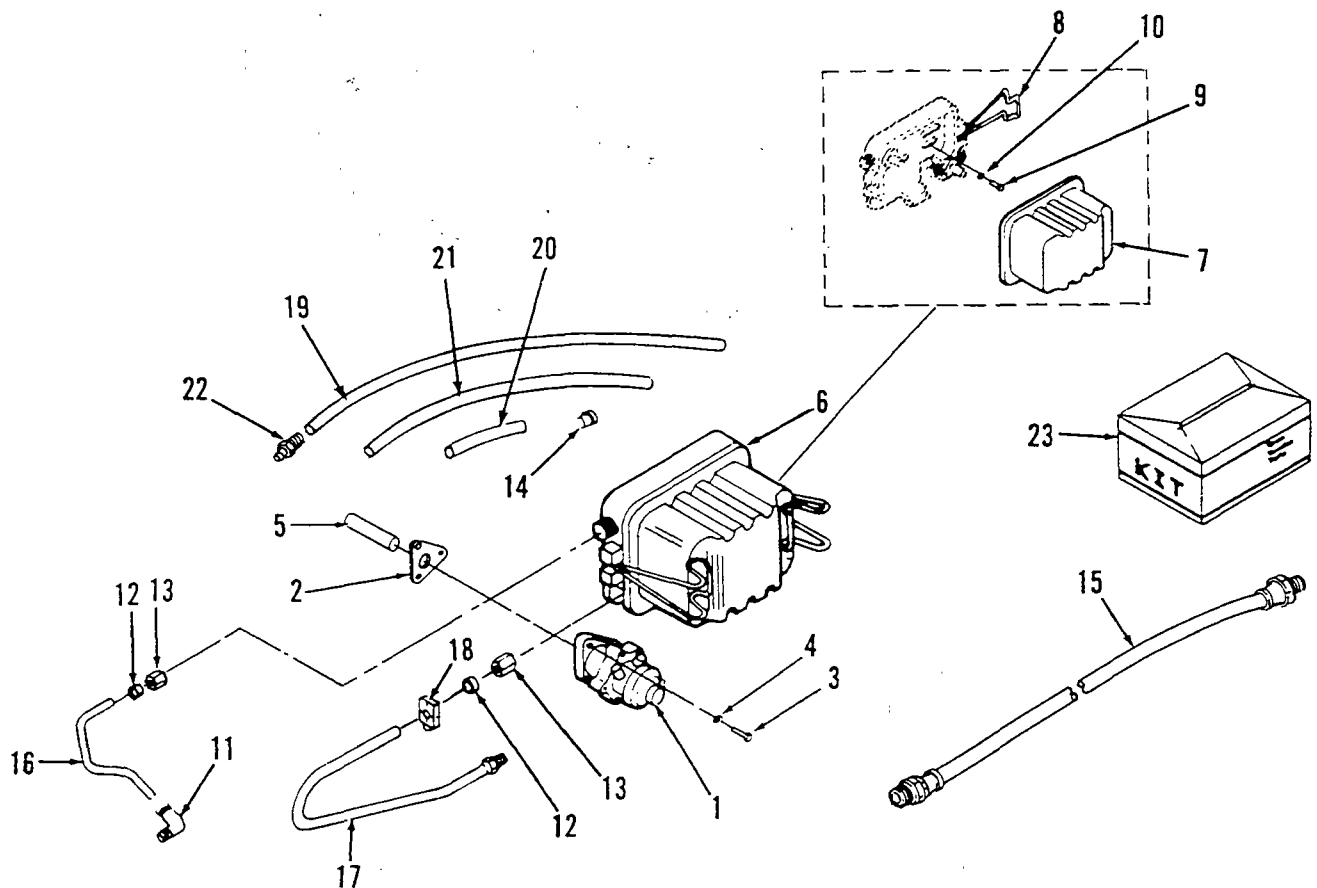


FS-1384

REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
	147-0462-08	1	Pump, Fuel Injection	11	147-0583	1	Seal, Locking Plate
1	147-0592	1	Strap, Terminal Grounding	12	147-0582	2	Seal, Pivot Shaft
2	147-0593	1	Solenoid and Frame Kit	13	147-0581	1	Seal, Advance Screw Hole Plug
3	147-0591	2	Washer, Terminal Insulating	14	147-0580	2	Seal, Head Locating Screws
4	147-0590	1	Gasket, Governor Cover	15	147-0579	1	Connector, Return Line
5	147-0589	1	Clip, Shaft Retaining	16	147-0578	1	Nut, Drive Shaft
6	147-0588	2	Seal, Throttle Shaft	17	509-0265	1	Seal, Pilot Tube
7	147-0587	2	Washer, Throttle Shaft Seal				
8	147-0586	1	Washer, Guide Stud				
9	147-0585	1	Gasket, Timing Line Cover				
10	147-0584	1	Seal, Return Line Connector				

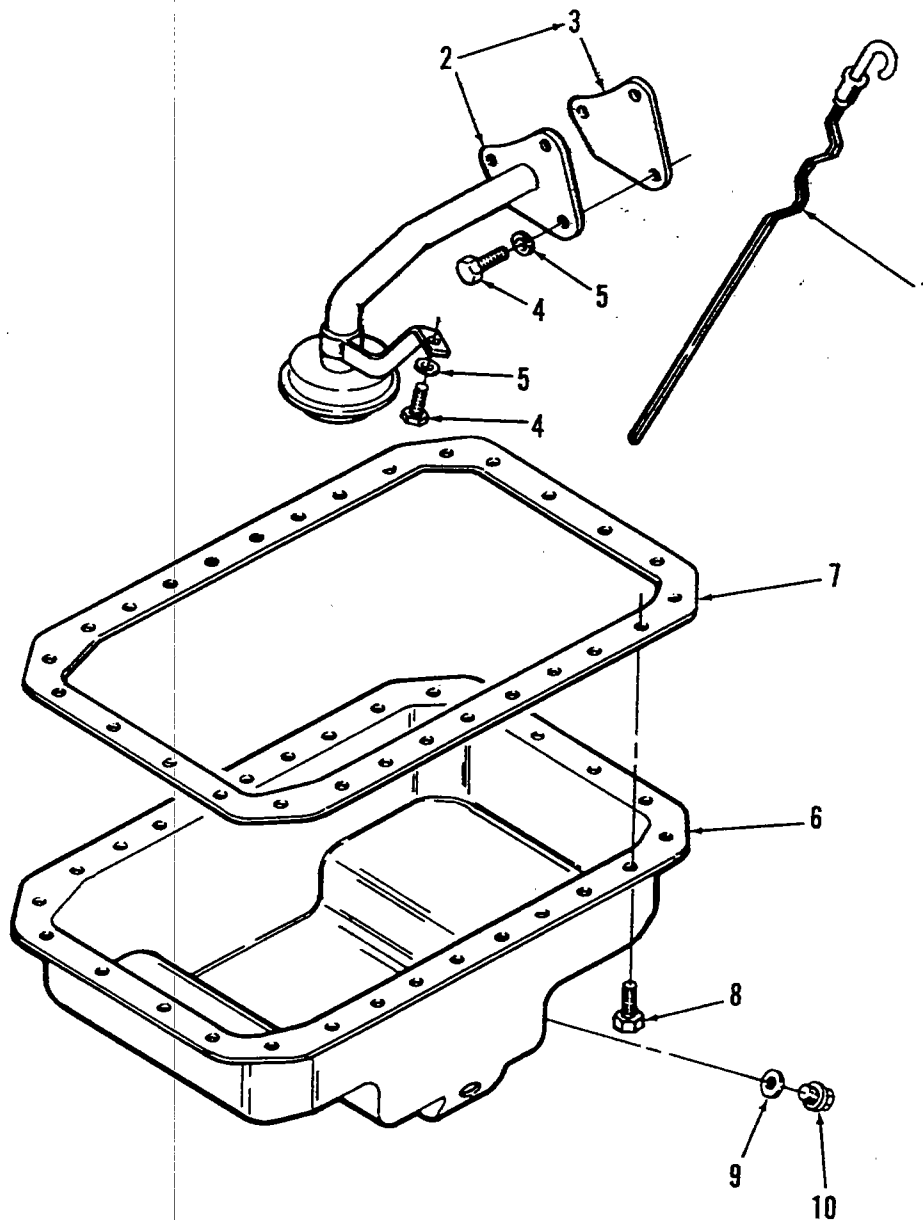
NOTE: For component parts not listed contact manufacturer shown on nameplate.

Fuel System



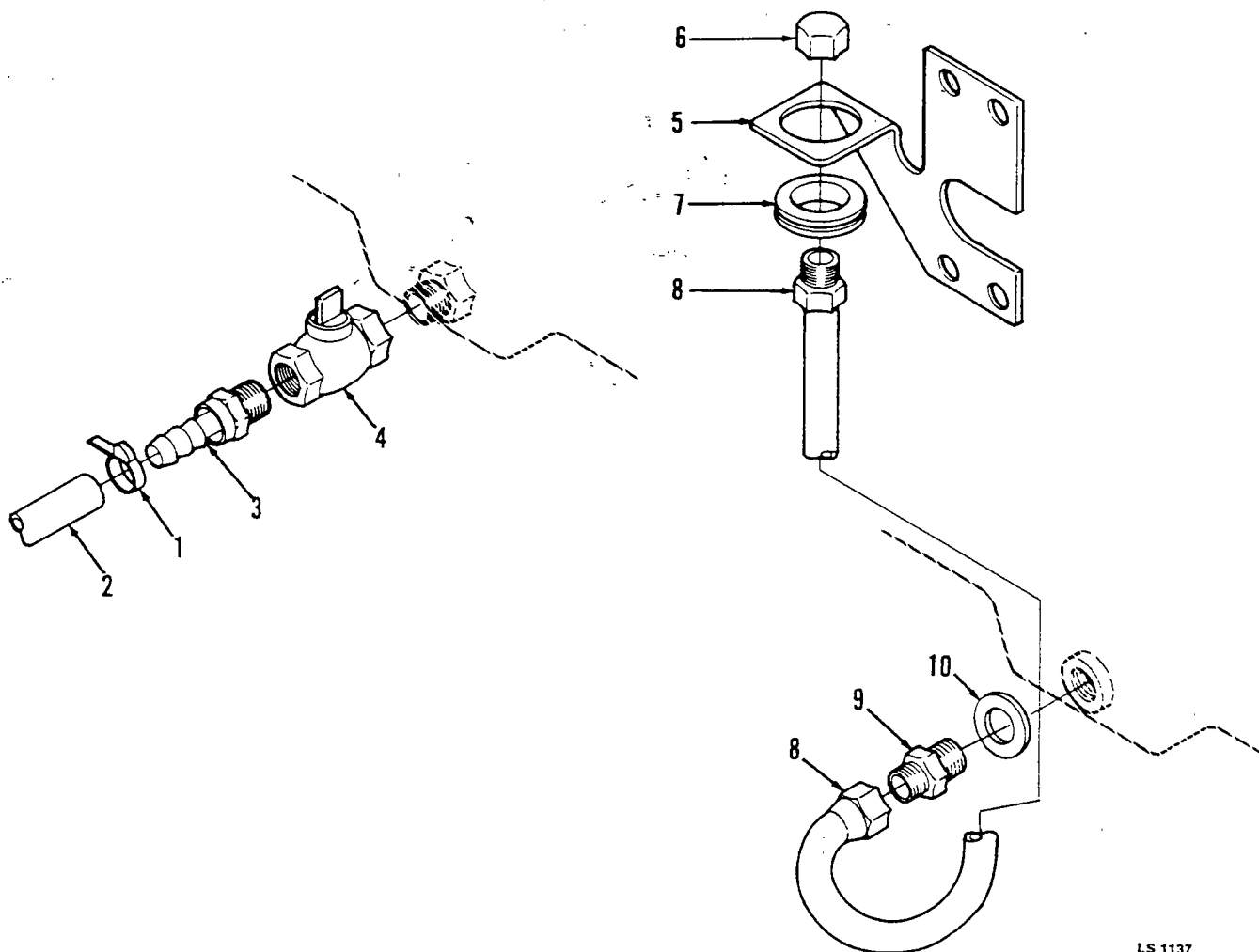
REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	149-2067	1	Pump Kit, Fuel Transfer (Includes Mounting Gasket)	12	502-0768	2	Sleeve, Flareless Line
2	149-1728	1	Gasket, Mounting	13	502-0769	2	Nut, Flareless Line
3	718-1021	3	Screw, Cap-Hex Head (M6 x 20 MM)	14	502-0736	1	Plug
4	740-1004	3	Washer, Flat (M6)	15	501-0441	1	Line, Flexible Fuel - 40" (Fuel Supply)
5	149-1732	1	Rod, Push	16	149-1772	1	Line, Fuel
6	149-1759	1	Filter Assembly (Includes Filter, Base, Clips and Grommet)	17	149-1793	1	Line, Fuel
7	149-1758	1	Filter, Fuel	18	149-1800	1	Grommet, Fuel Line
8	149-1771	2	Clip, Fuel Filter	19	503-1055	1	Line, Fuel Return (Flexible) 380 MM Long
9	725-1074	2	Screw, Cap - Socket Head (M10 x 20 MM)	20	503-1054	1	Line, Fuel Return (Flexible) 25 MM Long
10	740-1008	2	Washer, Flat (M10)	21	503-1053	3	Line, Fuel Return (Flexible) 180 MM Long
11	502-0774	1	Elbow, Fuel Pump Outlet	22	502-0738	1	Connector, Male - Barbed
				23	149-2069	1	Repair Package - Fuel Pump

Oil Pan



REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	123-1439	1	Indicator, Oil Level	6	102-1272	1	Pan, Oil (Includes Adapter, Plugs and Oil Drain Gaskets)
2	120-1008	1	Pickup Kit, Oil (Includes Gasket)	7	102-0981	1	Gasket, Oil Pan
3	120-0917	1	Gasket, Oil Pickup	8	815-0547	28	Screw, Cap - Hex Head (Includes Washer) - M8 x 20 MM
4	718-1044	2	M8 x 60 MM	9	102-1147	1	Gasket, Oil Drain Plug
	718-1036	2	M8 x 20 MM	10	102-1146	1	Plug, Oil Drain
5	740-1006	4	Washer, Flat (M8)				

Oil Drain Hardware



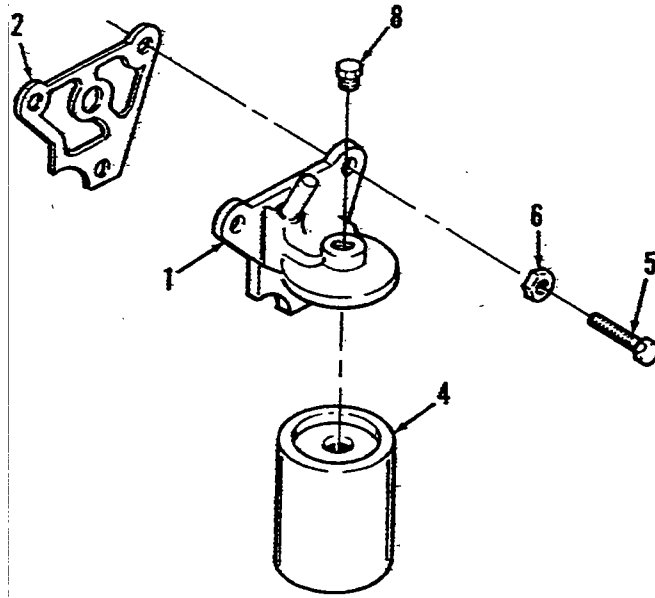
LS 1137

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	503-0382	1	*Clamp, Hose
2	503-1069	1	*Hose, Oil Drain (14")
3	502-0415	1	*Adapter, Pipe to Hose
4	504-0011	1	*Valve, Shutoff
5	102-1235	1	#Bracket, Oil Drain
6	502-0876	1	#Cap, Pipe
7	508-0250	1	#Grommet

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
8	501-0478	1	#Line, Oil Drain (20")
9	101-1237	1	#Adapter, Oil Drain
10	102-1147	1	#Gasket

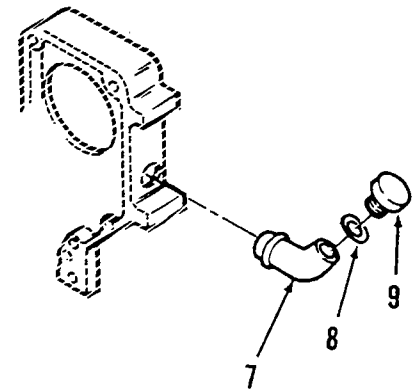
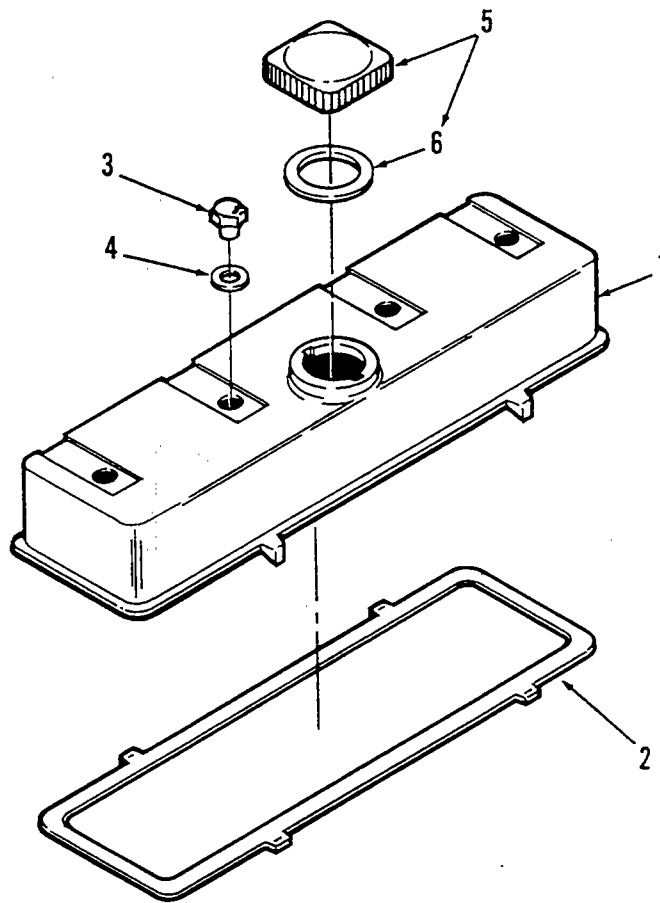
* - Used During Early Portion of Spec A
- Use Began During Later Portion of Spec A

Oil Filter



REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	122-0613	1	Adapter, Oil Filter (Includes Gasket)	5	725-1051	3	Screw, Cap - Socket Head (M8 x 25 MM)
2	122-0635	1	Gasket, Adapter	6	526-2108	3	Washer, Flat (M8)
4	122-0550	1	Filter, Oil	8	505-0274	1	Plug, Pipe-Countersunk (1/8")

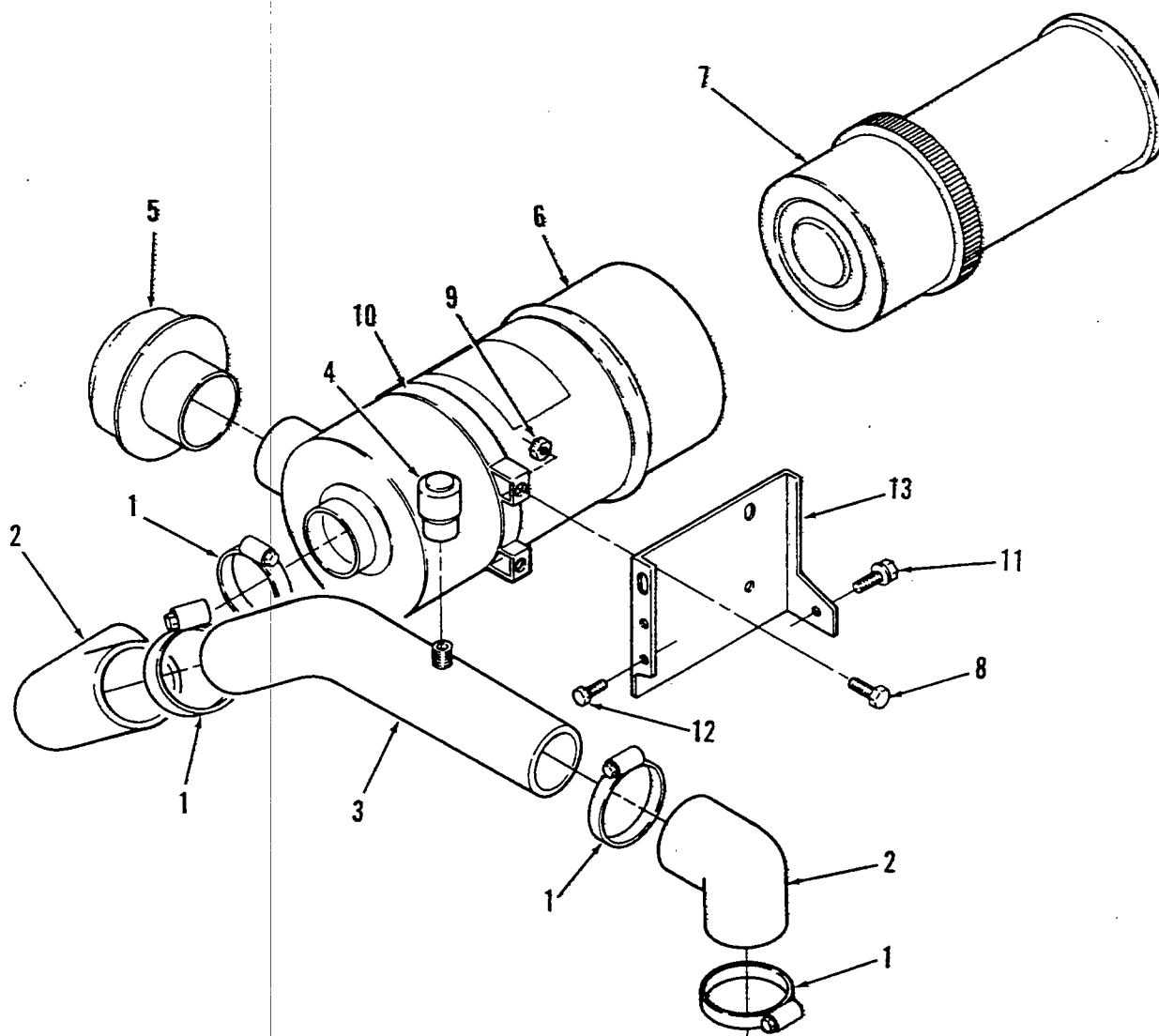
Oil Fill



REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	115-0345	1	Cover, Rocker
2	115-0254	1	Gasket, Rocker Cover
3	115-0320	4	Capnut, Rocker Cover
4	115-0232	4	Gasket, Capnut
5	123-1605	1	Cap, Oil Fill (Includes Gasket)

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
6	123-1518	1	Gasket, Oil Fill Cap
7	123-1558	1	Tube, Oil Fill
8	509-0142	1	Seal, O-Ring
9	123-1647	1	Cap, Oil Fill

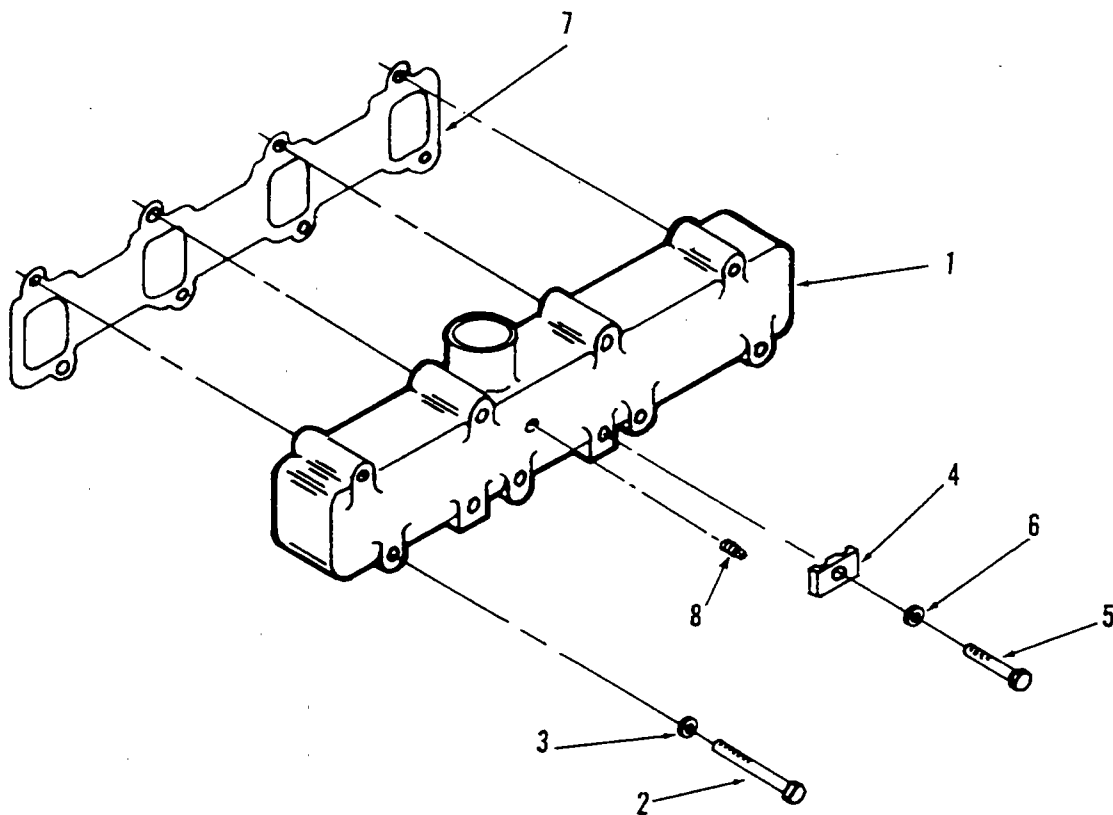
Air Cleaner



REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	503-0354	4	Clamp, Hose
2	503-1222	2	Elbow, Rubber - 90°
3	140-1801	1	Tube, Air Inlet
4	140-1791	1	Indicator, Service
5	140-1787	1	Hood, Air Cleaner
6	140-1869	1	Cleaner, Air (Includes Element)
7	140-1204	1	Element, Air Cleaner
8	821-2046	4	Screw, Self-locking - Hex Washer Head (M8 x 20 MM)

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
9	870-2055	4	Nut, Self-locking - Hex Washer Head (M8)
10	140-0078	2	Band, Mounting
11	821-2076	1	Screw, Self-locking - Hex Washer Head (M12 x 25 MM)
12	821-2060	2	Screw, Self-locking - Hex Washer Head (M10 x 20 MM)
13	140-1772	1	Bracket, Mounting

Intake Manifold



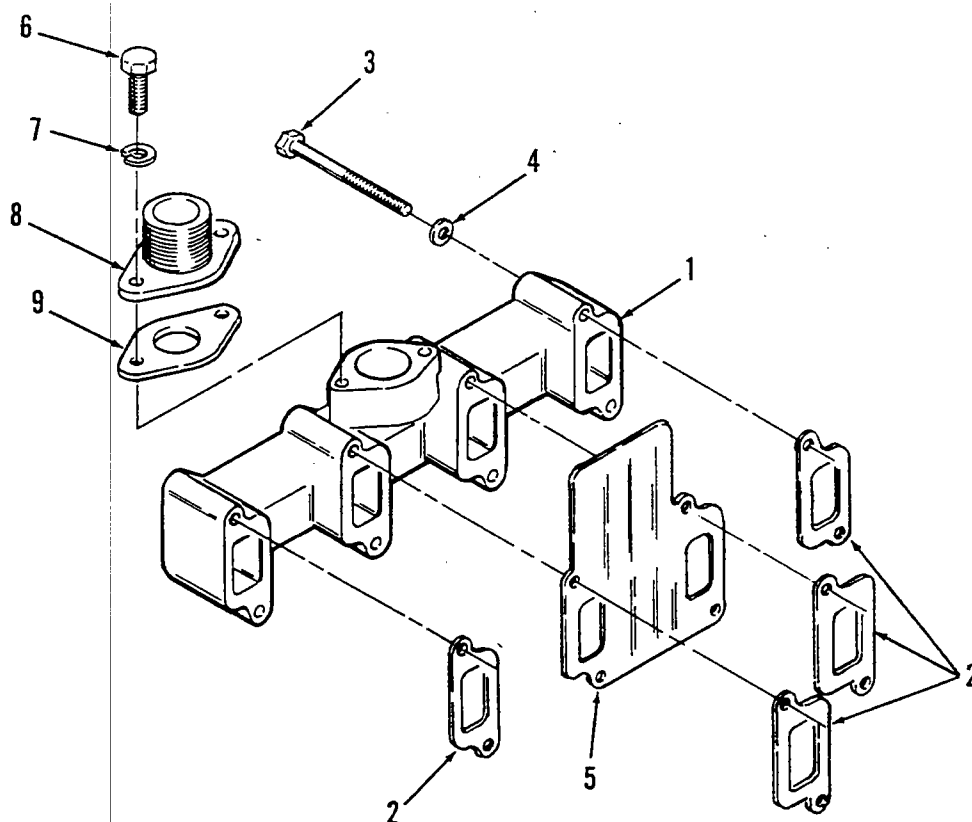
EXS-1050

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	154-2460	1	Manifold Kit, Intake (Includes Plug)
2	718-1801	8	Screw, Cap - Hex Head (M8 x 85 MM) Engines Without Code 31AL
3	740-1006	8	Washer, Flat (M8)
4	147-0438	4	*Clamp, Injection Lines

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
5	718-1022	2	*Screw, Cap - Hex Head (M6 x 25 MM)
6	740-1004	2	*Washer, Flat (M6)
7	154-2261	1	Gasket, Intake Manifold
8	505-0274	1	Plug, Pipe-Countersunk (1/8")

* - Used During Early Portion of Spec A

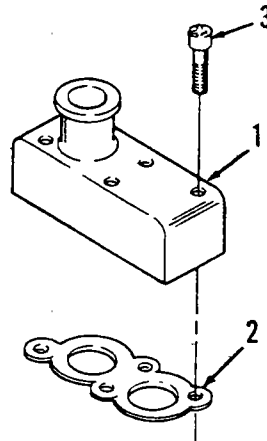
Exhaust Manifold



REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	154-2388	1	Manifold, Exhaust
2	154-2162	2	Gasket, Exhaust Manifold
3	800-2524	8	Screw, Cap - Hex Head (M8 x 90 MM)
4	740-1006	8	Washer, Flat (M8)
5	154-2325	1	Gasket, Exhaust Manifold

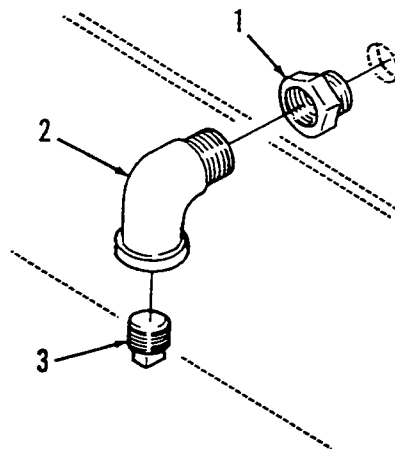
REF NO.	PART NO.	QTY USED	PART DESCRIPTION
6	800-2085	2	Screw, Cap - Hex Head (M10 x 20 MM)
7	850-2010	2	Washer, Lock (M10)
8	155-1916	1	Flange, Exhaust
9	155-1920	1	Gasket, Exhaust Flange

Coolant Outlet Connector



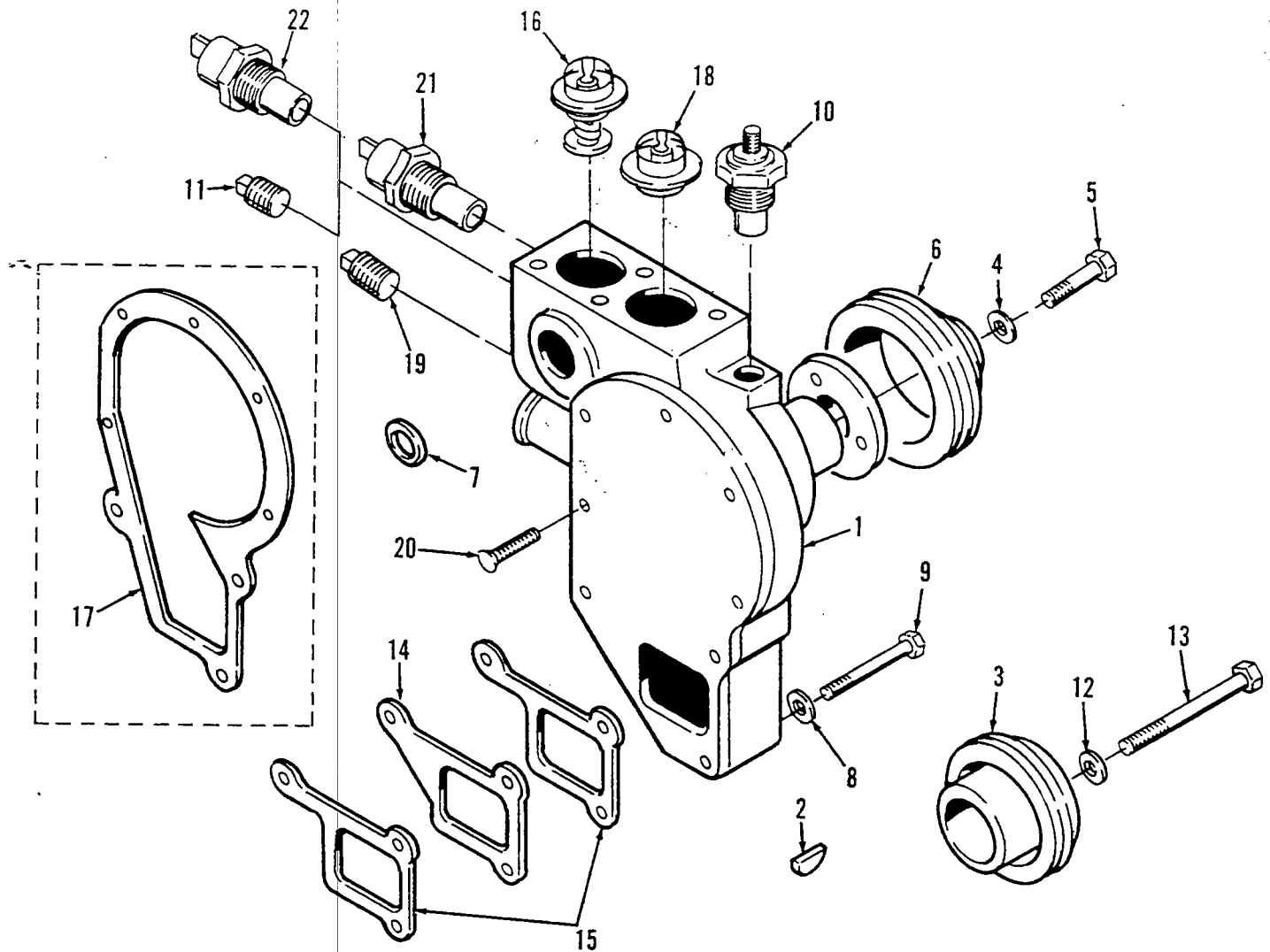
REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	309-0473	1	Cover, Thermostat (Includes Gasket)
2	309-0424	1	Gasket
3	725-1056	4	Screw, Cap - Socket Head (M8 x 50 MM)

Coolant Heater Connection



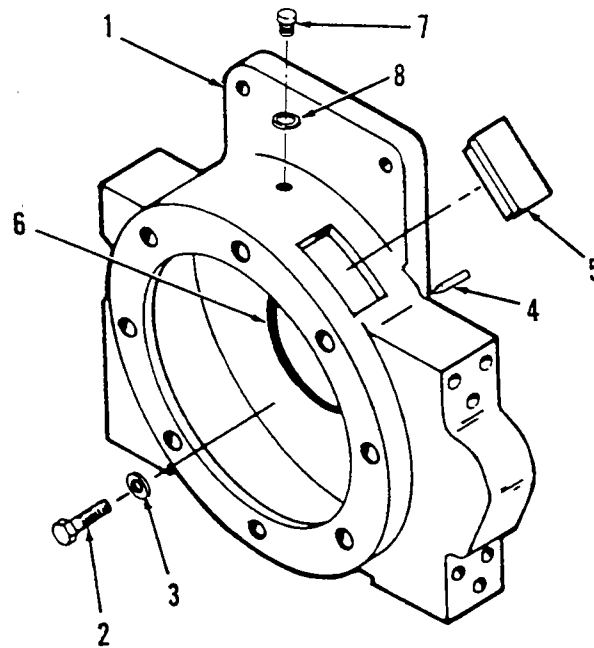
REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	505-0017	1	Bushing
2	502-0156	1	Elbow, Street
3	502-0153	1	Plug, Brass

Coolant Pump



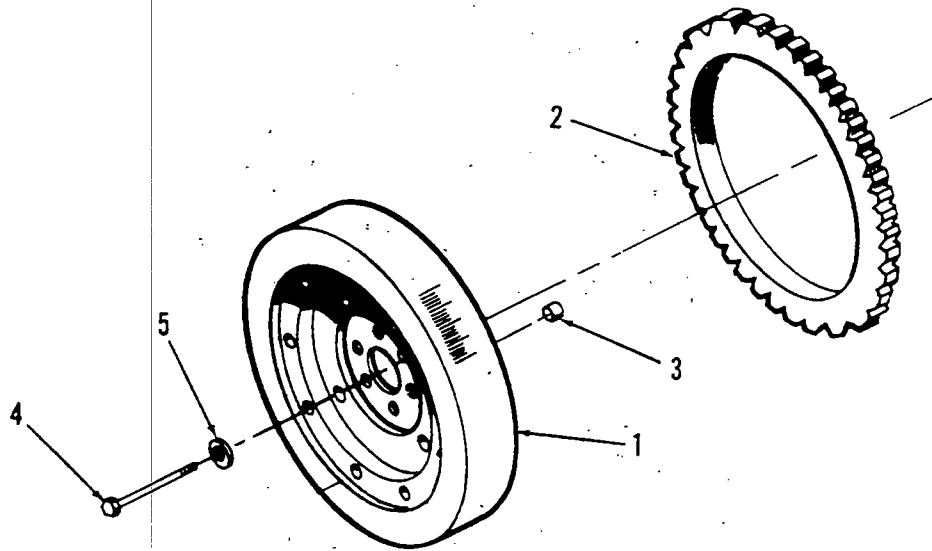
REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	131-0349	1	Kit, Coolant Pump (Includes Mounting Gaskets)	15	131-0294	2	Gasket, Pump Mounting
2	515-0245	1	Key - Crankshaft Pulley	16	309-0458	1	Kit, Thermostat (192°) Includes Cover Gasket
3	104-1468	1	Pulley, Crankshaft	17	131-0335	1	Gasket, Backplate
4	740-1006	4	Washer, Flat (M8)	18	309-0462	1	Kit, Thermostat (180°) Includes Cover Gasket
5	718-1035	4	Screw, Cap - Hex Head (M8 x 16 MM)	19	502-0317	1	Plug, Pipe (3/4")
6	131-0347	1	Pulley, Coolant Pump	20	815-0612	5	Screw, Countersunk - Flat Head - Torque Drive (Special)
7	509-0264	1	Seal, O-Ring	21	309-0437	1	Switch, Thermostat - High Engine Coolant Temperature (S1) (Opens at 202° F. - Closes at 222° F.)
8	740-1006	3	Washer, Flat (M8)	22	309-0436	1	Switch, Thermostat - High Engine Coolant Temperature (S2 - Pre-Alarm) (Opens at 196° F. - Closes at 216° F.) Controls With 9 Indicator Lights
9	718-1044	3	Screw, Cap - Hex Head (M8 x 60 MM)				
10	193-0318	1	Sender, Water Temperature (E2)				
11	502-0775	1	Plug, Pipe (3/8") Controls with 2 Indicator Lights				
12	526-0283	1	Washer, Flat (M8)				
13	720-1123	1	Screw, Cap - Hex Head (M16 x 60 MM)				
14	131-0324	1	Spacer, Coolant Pump				

Flywheel Housing



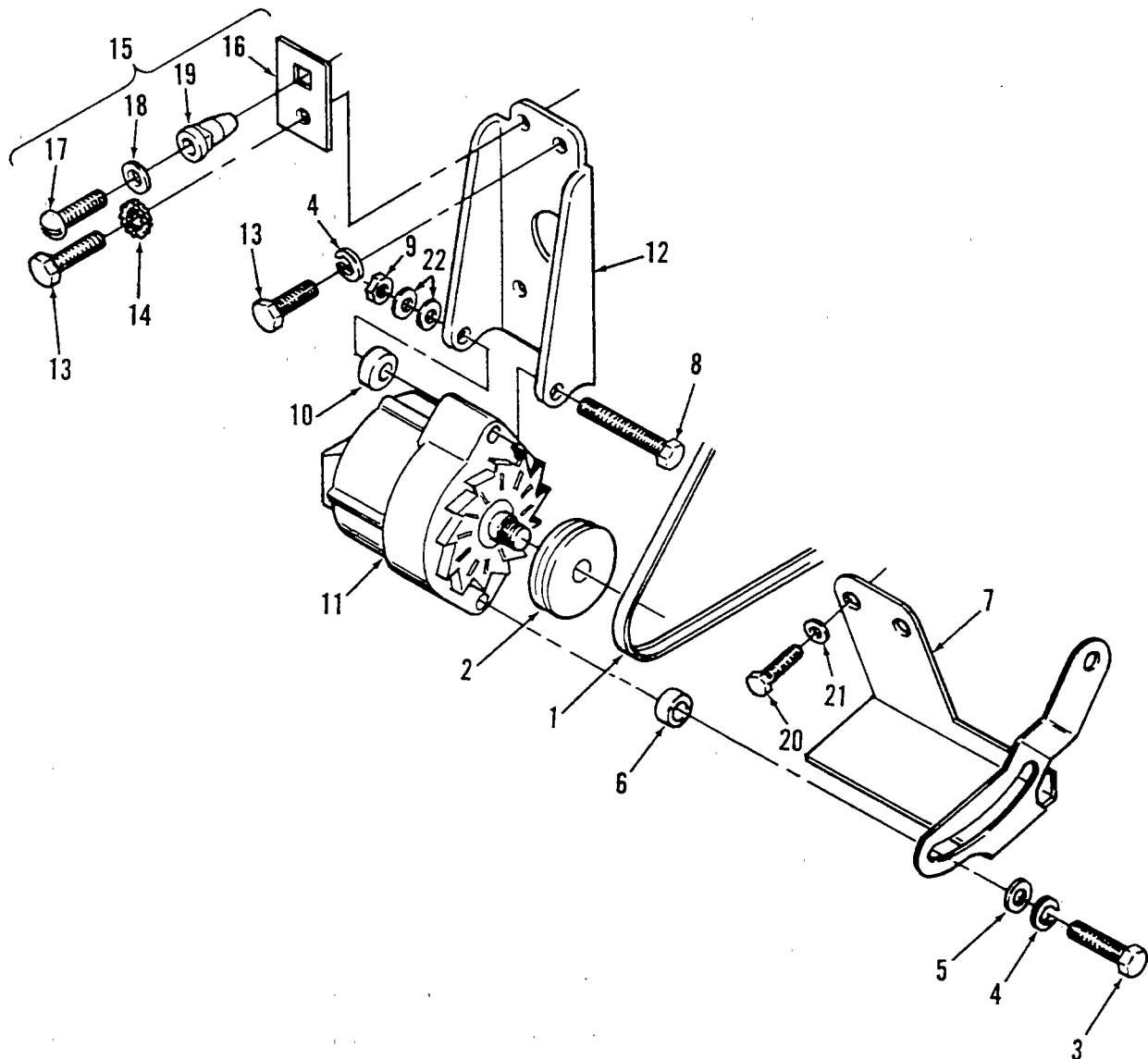
REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	101-0740-02	1	Housing, Flywheel (Includes Seal and Indicator)	4	160-1292	1	Indicator, Timing
2	718-1078	6	Screw, Cap - Hex Head (M12 x 50 MM)	5	101-0592	1	Plug, Timing Window
3	740-1801	6	Washer, Flat (M12)	6	101-0630	1	Seal, Flywheel Housing
				7	505-2012	1	Plug, Hex
				8	740-1014	1	Washer, Flat (M16)

Flywheel1



REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	104-1503	1	Flywheel Assembly (Includes Ring Gear and Alignment Pin)	4	720-1804	6	Screw, Cap - Flange Hex Head (Special)
2	104-1185	1	Gear, Ring	5	740-1008	6	Washer, Flat (M10)
3	104-1171	1	Pin, Alignment				

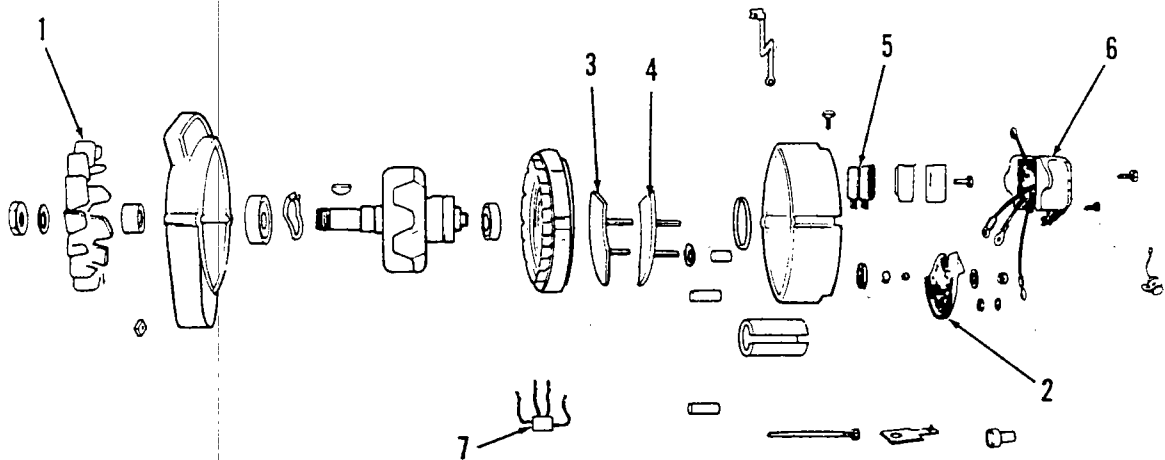
Alternator



REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	511-0147-07	2	Belt	13	800-2058	4	Screw, Cap - Hex Head (M8 x 25 MM)
2	191-1333	1	Pulley	14	856-0010	1	Washer, Lock - EIT (3/8")
3	800-2060	1	Screw, Cap - Hex Head (M8 x 35 MM)	15	332-1292	1	Terminal Assembly (Includes Parts Marked *)
4	850-2008	4	Washer, Lock - Spring (M8)	16	332-1281	1	*Bracket, Terminal
5	526-2106	1	Washer, Flat (M8)	17	809-0035	1	*Screw, Sheet Metal - Round Head (#8 x 3/4")
6	191-1541	1	Spacer	18	508-0015	1	*Washer, Fiber
7	191-1615	1	Strap, Adjusting	19	870-0196	1	*Nut, Insulation
8	800-2100	1	Screw, Cap - Hex Head (M10 x 100 MM)	20	718-1072	2	Screw, Cap - Hex Head (M12 x 20 MM)
9	860-2009	1	Nut, Hex (M10)	21	740-1010	2	Washer, Flat (M12)
10	191-1321	1	Spacer	22	740-1008	2	Washer, Flat (M10)
11	191-1525	1	Alternator (37 Amp) See Separate Page for Components				
12	191-1332	1	Bracket, Mounting				

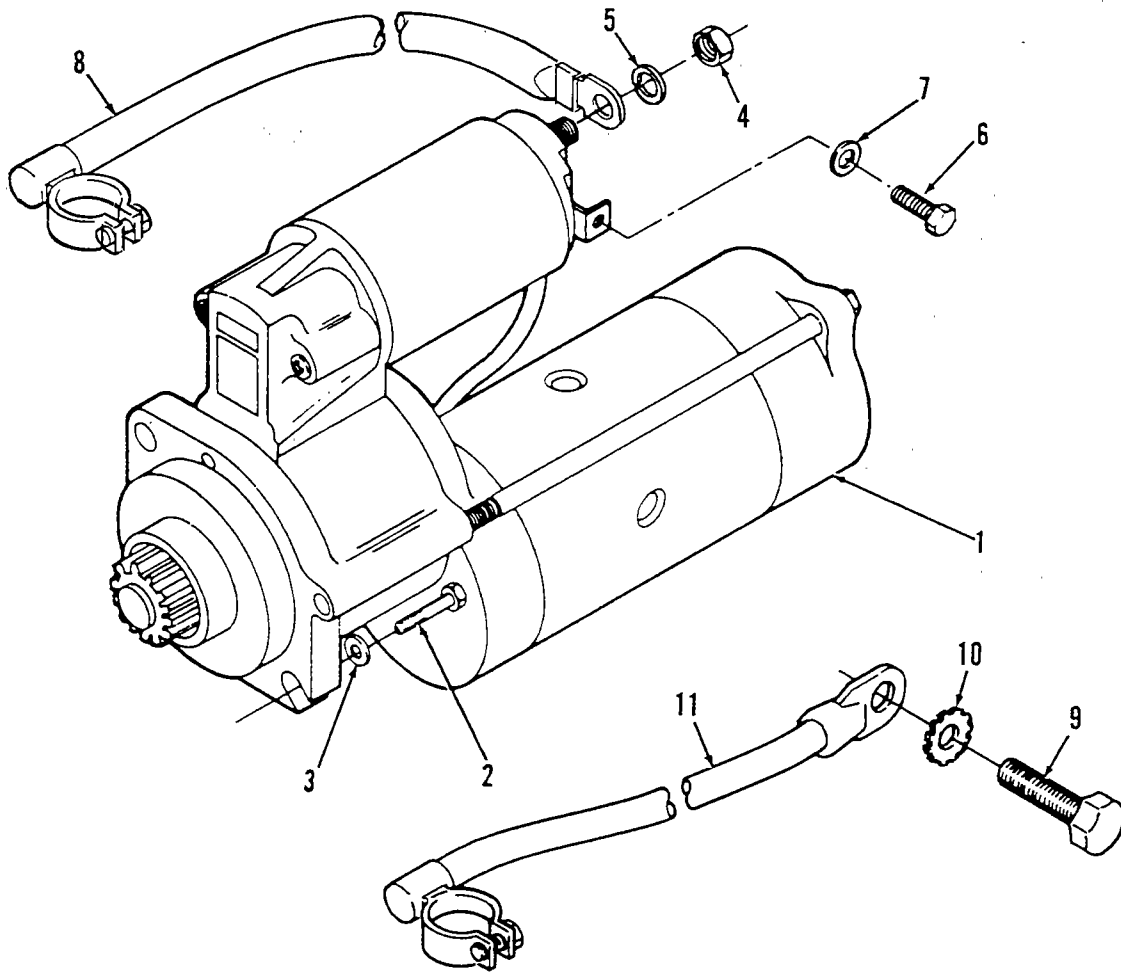
* - Parts Included in 332-1292 Terminal Assembly

Alternator Components



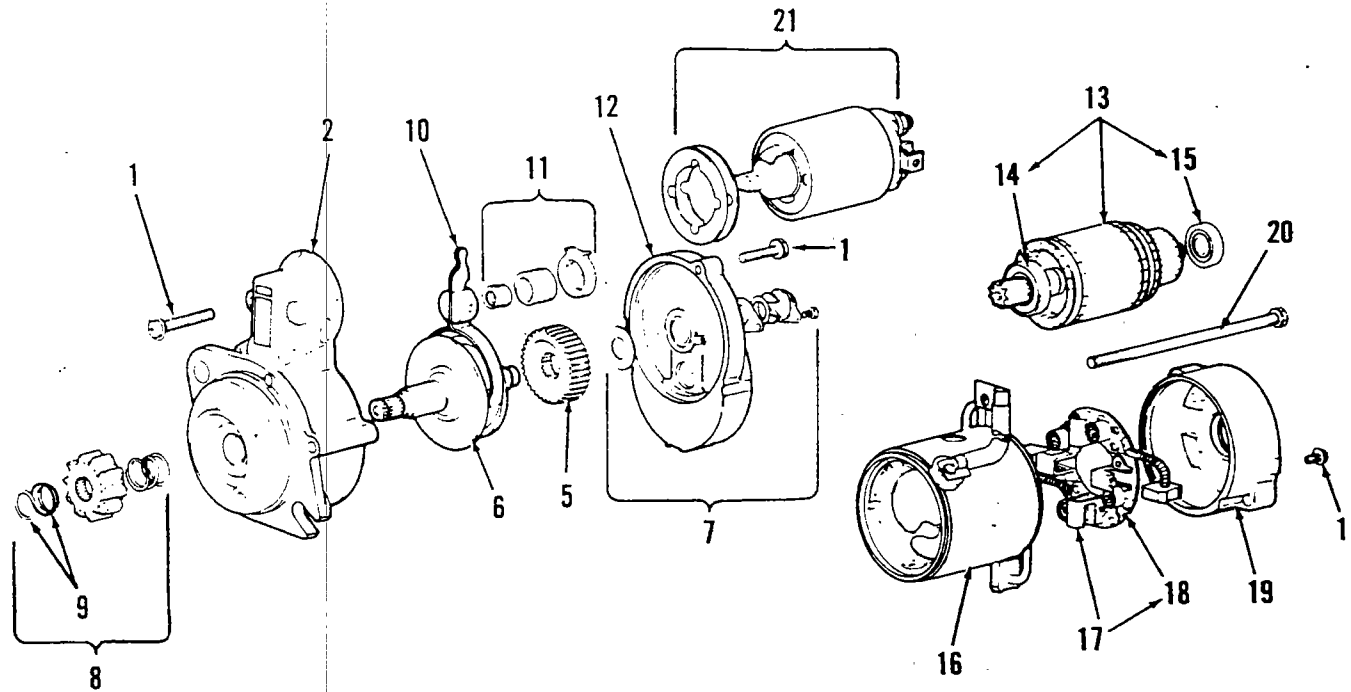
REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
	191-1525	1	Alternator (Complete) Used on Late Models - Has No Isolation Diodes on Back Side of Alternator (Replaces Early Models With Isolation Diode Assembly on Back Side of Alternator)	4	191-1452	1	Diode, Rectifier - Positive Used on Early Models with Isolation Diode Assembly
1	191-0943	1	Fan, Alternator		191-1559	1	Used on Late Models without Isolation Diode Assembly
2	191-1454	1	Diode Assembly, Isolation - Used on Early Models	5	191-0659	1	Brush Assembly Used on Early Models with Isolation Diode Assembly
3	191-1453	1	Diode, Rectifier - Negative Used on Early Models with Isolation Diode Assembly		191-1558	1	Used on Late Models without Isolation Diode Assembly
	191-1560	1	Used on Late Models without Isolation Diode Assembly	6	191-1457	1	Regulator, Voltage Used on Early Models with Isolation Diode Assembly
					191-1557	1	Used on Late Models without Isolation Diode Assembly
				7	191-1556	1	Diode, Trio - Used on Late Models without Isolator Diode Assembly

Starter



REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	191-1394	1	Starter (Includes Switch Terminal Hardware) (See Separate Page for Components)	7	850-2005	1	Washer, Lock - Spring (M5) Solenoid Terminal
2	720-1806	2	Screw, Cap - Flanged Hex Head (M12 x 30 MM)	8	416-0618	1	Cable, Battery - 42" (Positive)
3	740-1010	2	Washer, Flat (M12)	9	800-2110	1	Screw, Cap - Hex Head (M12 x 20 MM)
4	860-2008	1	Nut, Hex (M8) B+ Terminal	10	856-0013	1	Washer, Lock - EIT (1/2")
5	850-2008	1	Washer, Lock - Spring (M8) B+ Terminal	11	416-0530	1	Cable, Battery - 16" (Negative)
6	718-1002	1	Screw, Cap - Hex Head (M5 x 8 MM) Solenoid Terminal				

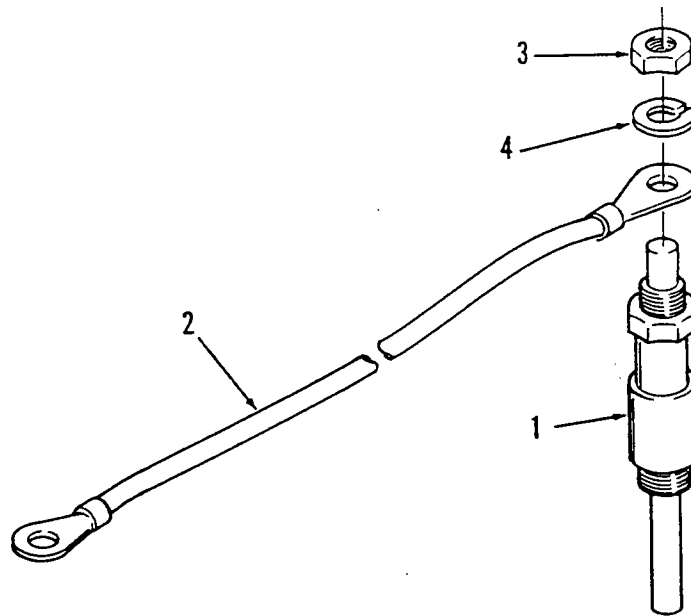
Starter Components



XES-1255

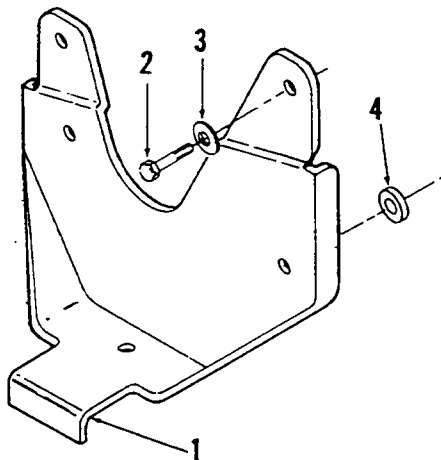
REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
	191-1394	1	Starter (Complete)	12	191-1439	1	Bracket Assembly, Center
1	191-1450	1	Screw Set	13	191-1438	1	Armature Assembly (Includes Bearings)
2	191-1449	1	Bracket Assembly, Front (Includes Bearing)	14	191-1437	1	Bearing, Center
5	191-1446	1	Gear	15	191-1436	1	Bearing, Rear
6	191-1445	1	Clutch	16	191-1435	1	Yoke Assembly (Includes Pole Shoes, Field Coil and Positive Brushes)
7	191-1444	1	Cover Set (Includes Cover, Plate, Washers, Snap Ring, and Screws)	17	191-1434	1	Holder, Brush (Includes Negative Brushes)
8	191-1443	1	Pinion Set (Includes Pinion, Spring, and Stopper Set)	18	191-1433	4	Spring, Brush
9	191-1442	1	Stopper Set (Includes Stopper and Ring)	19	191-1432	1	Bracket, Rear
10	191-1441	1	Lever Assembly	20	191-1431	1	Bolt Set
11	191-1440	1	Spring Set	21	191-1430	1	Switch Assembly

Glow Plug



REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	333-0220	4	Plug, Glow	3	750-1002	4	Nut, Hex (M5)
2	336-4131	3	Lead, Glow Plug	4	850-2005	4	Washer, Lock - Spring (M5)

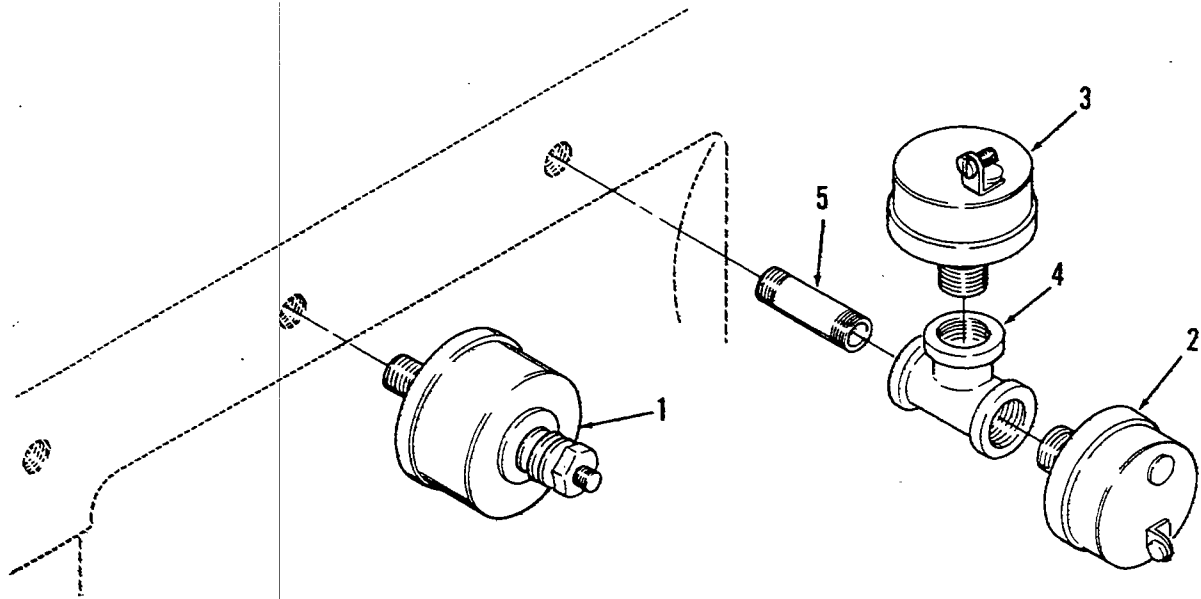
Front Engine Mount



- M-1548

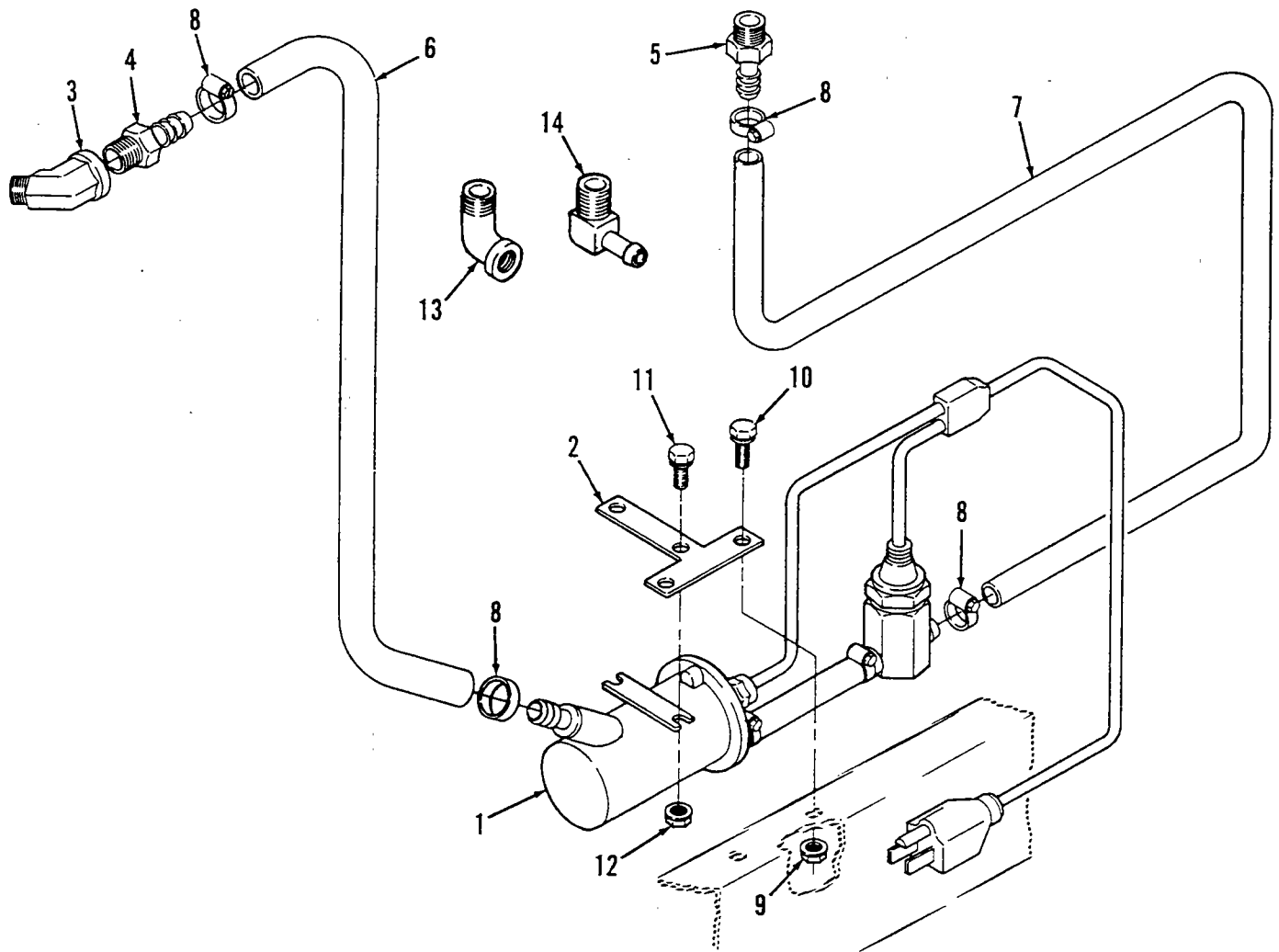
REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	403-1925	1	Bracket, Mount	3	740-1010	4	Washer, Flat (M12)
2	718-1086	2	Screw, Cap - Hex Head	4	403-1932	2	Spacer, Bracket Mounting
	718-1802	2	M12 x 90 MM (Top)				
		2	M12 x 95 MM (Bottom)				

Oil Pressure Switch



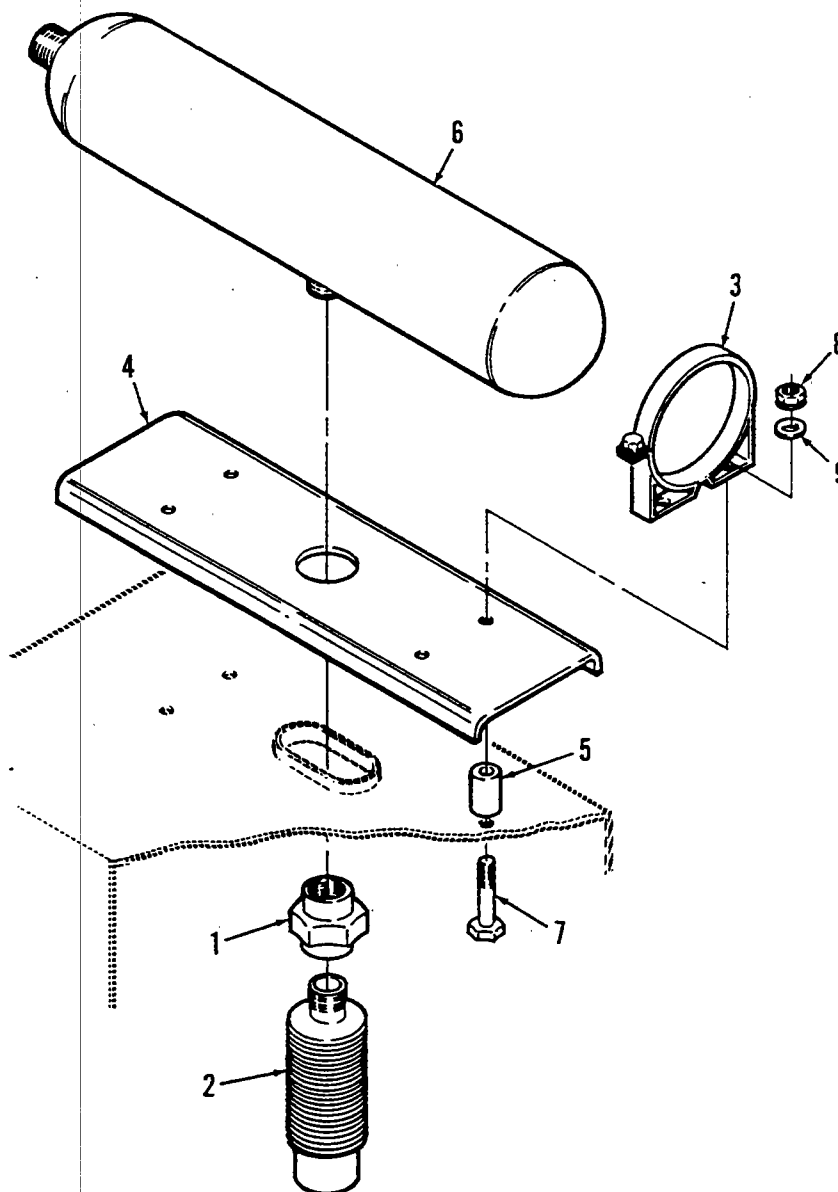
REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	193-0244	1	Sender, Oil Pressure (E1)	4	505-0059	1	Tee, Pipe (1/8") (Controls with 9 Indicator Lights)
2	309-0169	1	Switch, Oil Pressure (S3)	5	505-0098	1	Nipple, Pipe (1/8" x 3/4") (Controls with 9 Indicator Lights)
3	309-0272	1	Closes at 14 lbs. Descending				
			Switch, Oil Pressure (S4 - Pre-Alarm) Closes at 20 lbs. Descending (Controls with 9 Indicator Lights)				

Engine Coolant Heater



REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	333-0255-01	1	Heater, Engine Coolant 750 Watt, 120 Volt AC, Single Phase	10	821-2061	2	Screw, Self-locking - Flange (M10 x 25 MM)
	333-0255-04	1	750 Watt, 240 Volt AC, Single Phase	11	821-2033	2	Screw, Self-locking - Flange (M6 x 16 MM)
2	130-2246	1	Plate, Mounting	12	870-2054	2	Nut, Self-locking - Flange (M6)
3	502-0156	1	Elbow, Street - 45° (1/4")	13	505-0120	1	Elbow, Pipe - 90° (3/8") Used on some early Spec A models
4	502-0613	1	Connector, Hose (1/4" Pipe to 5/8" Hose)	14	502-0817	1	Elbow, Pipe to Hose - 90° (3/8" Pipe to 5/8" Hose) Used on some early Spec A models
5	502-0816	1	Connector, Hose (3/8" Pipe to 5/8" Hose)				
6	503-0833	1	Hose, Rubber (5/8" ID x 16")				
7	503-1168	1	Hose, Rubber (5/8" ID x 35")				
8	503-0183	4	Clamp, Hose				
9	870-2056	2	Nut, Self-locking - Flange (M10)				

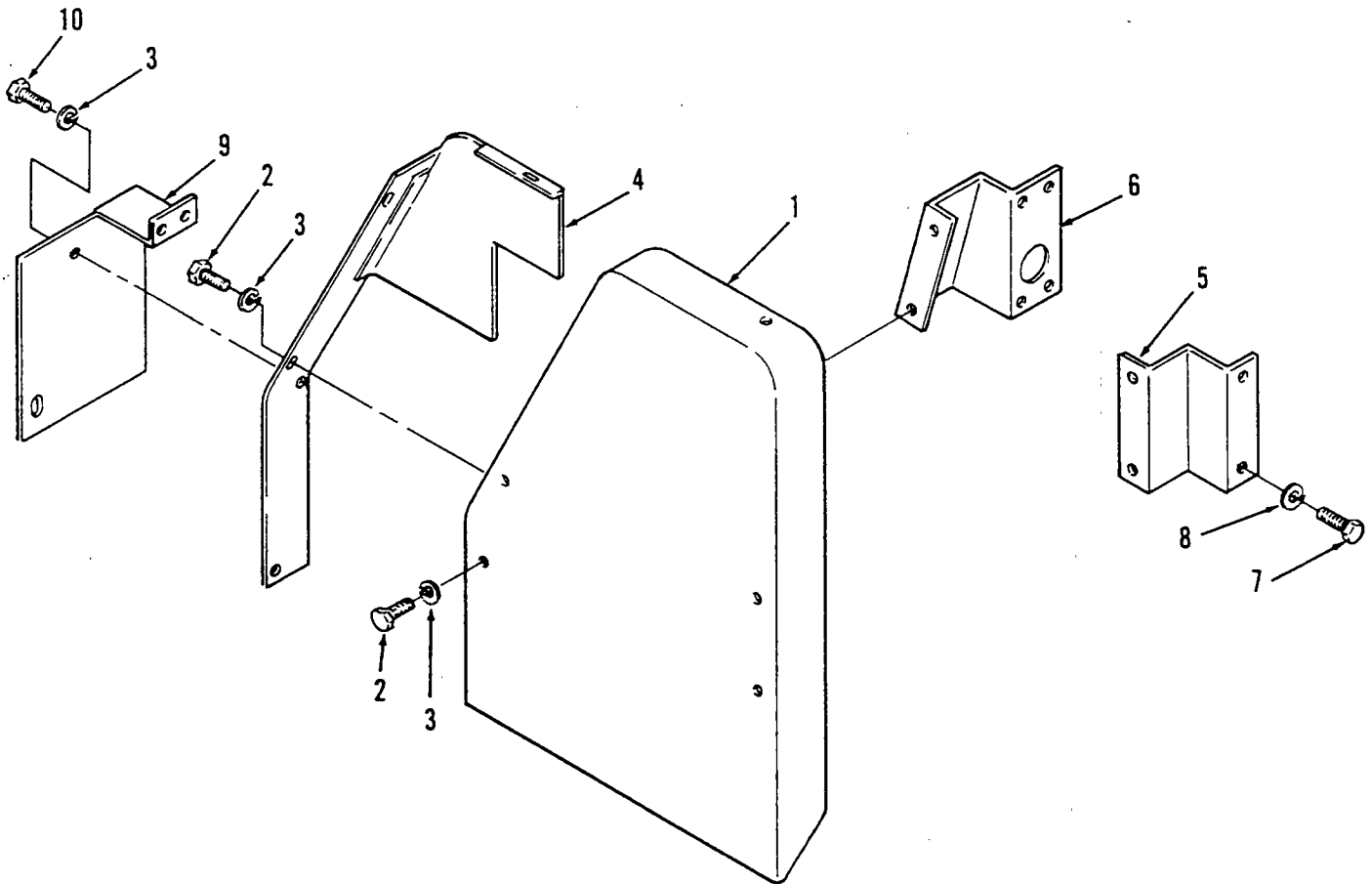
Muffler (Housed Set)



REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	505-0454	1	Union, Pipe (2")
2	155-2007	1	Tube, Exhaust - Flexible
3	140-0752	2	Band, Mounting
4	155-1931	1	Shield, Heat
5	155-1430	4	Spacer
6	155-1614	1	Muffler, Exhaust

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
7	800-2069	4	Screw, Cap - Hex Head (M8 x 80 MM)
8	870-2055	4	Nut, Self-locking - Hex Washer Head (M8)
9	526-2100	8	Washer, Flat (M8)

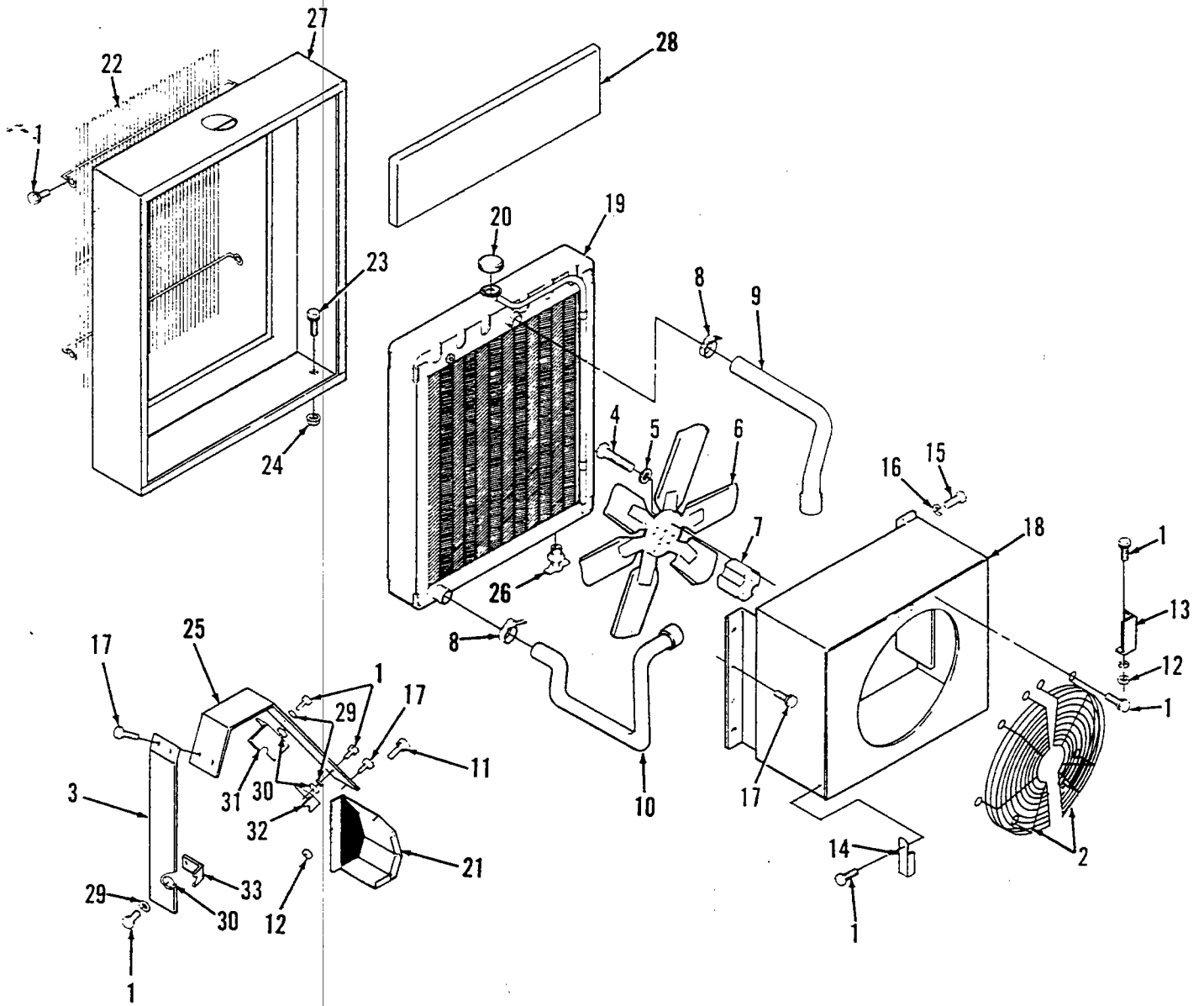
**Belt Guard
(With Remote Radiator)**



REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	130-2792	1	Panel, Front
2	800-2029	8	Screw, Cap - Hex Head (M6 x 12 MM)
3	850-2006	9	Washer, Lock - Spring (M6)
4	130-2788	1	Panel, Side
5	130-2785	1	Bracket, Belt Guard (Left Hand)
6	130-2786	1	Bracket, Belt Guard (Right Hand)

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
7	800-2056	2	Screw, Cap - Hex Head (M8 x 16 MM)
8	850-2008	2	Washer, Lock - Spring (M8)
9	191-1678	1	Guard, Alternator
10	718-1021	1	Screw, Cap - Hex Head (M6 x 20 MM)

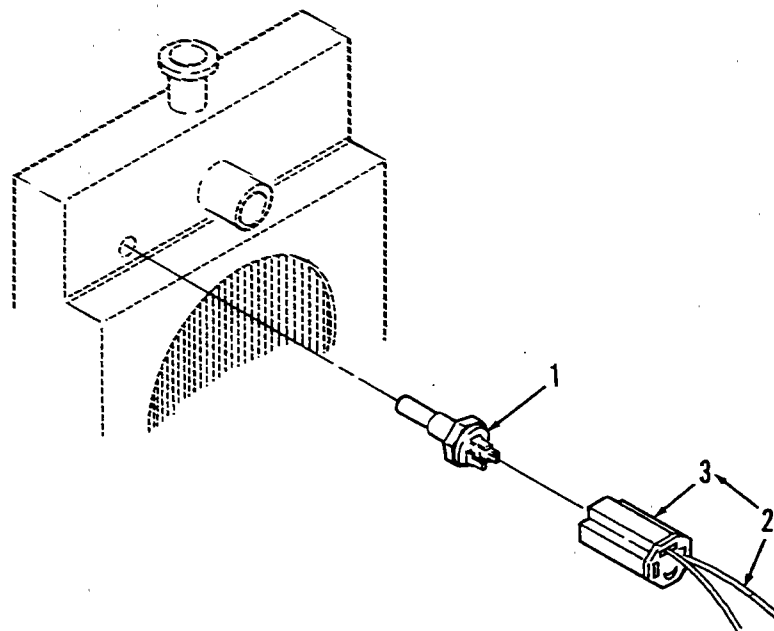
Cooling System



Cooling System

REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	821-2033	21	Screw, Self-locking - Hex Washer Head (M6 x 16 MM)	17	821-2032	16	Screw, Self-locking - Hex Washer Head (M6 x 12 MM)
2	130-2298	2	Guard, Fan	18	130-2276	1	Shroud, Fan
3	191-1577	1	Guard, Belt	19	130-1817	1	Radiator
4	800-2071	4	Screw, Cap - Hex Head (M8 x 90 MM)	20	130-2003	1	Cap, Pressure
5	740-1006	4	Washer, Flat (M8)	21	191-1539	1	Guard, Belt
6	130-2324	1	Fan (20-9/32")	22	405-3182	1	Grille
7	130-1876	1	Spacer, Fan (65 MM)	23	821-2061	5	Screw, Self-locking - Hex Washer Head (M10 x 25 MM)
8	503-0365	4	Clamp, Hose	24	870-2056	5	Nut, Self-locking - Hex Washer Head (M10)
9	503-1255	1	Hose, Radiator - Upper	25	191-1579	1	Guard, Belt
10	503-1256	1	Hose, Radiator - Lower	26	504-0003	1	Cock, Drain (1/4")
11	821-0010	2	Screw, Self-locking - Hex Washer Head (1/4-20 x 1/2")	27	405-3201	1	Housing - Front
12	870-2054	4	Nut, Self-locking - Hex Washer Head (M6)	28	130-2270	2	Insert, Shroud
13	130-2293	1	Support, Fan Shroud - Right Hand	29	402-0546	3	Insert, Isolator
14	130-2294	1	Support, Fan Shroud - Left Hand	30	508-0248	3	Grommet, Rubber
15	718-1032	16	Screw, Cap - Hex Head (M8 x 10 MM)	31	191-1580	1	Bracket, Support - Belt Guard
16	850-2008	16	Washer, Lock - Spring (M8)	32	191-1593	1	Bracket, Support - Belt Guard
				33	191-1590	1	Bracket, Support - Belt Guard

Low Coolant Level Switch



REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	193-0322	1	Switch - Coolant Level (S7)
2	338-1691	1	Harness, Wiring (Includes Housing)
3	323-1236	1	Housing, Connector

This exploded view diagram illustrates the assembly of a mechanical device. The main components are numbered as follows:

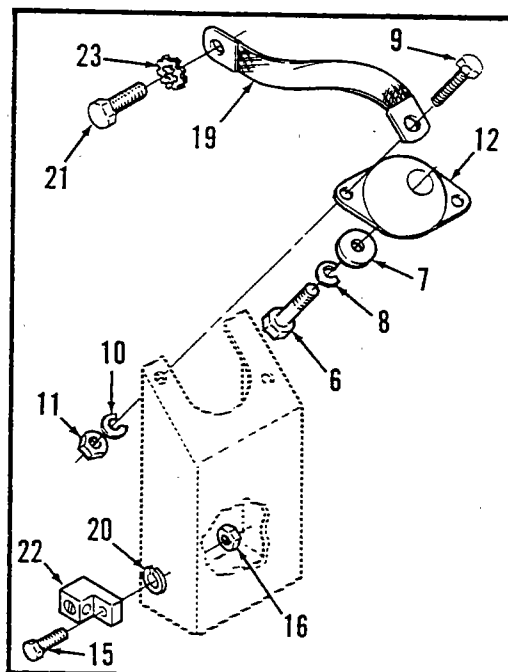
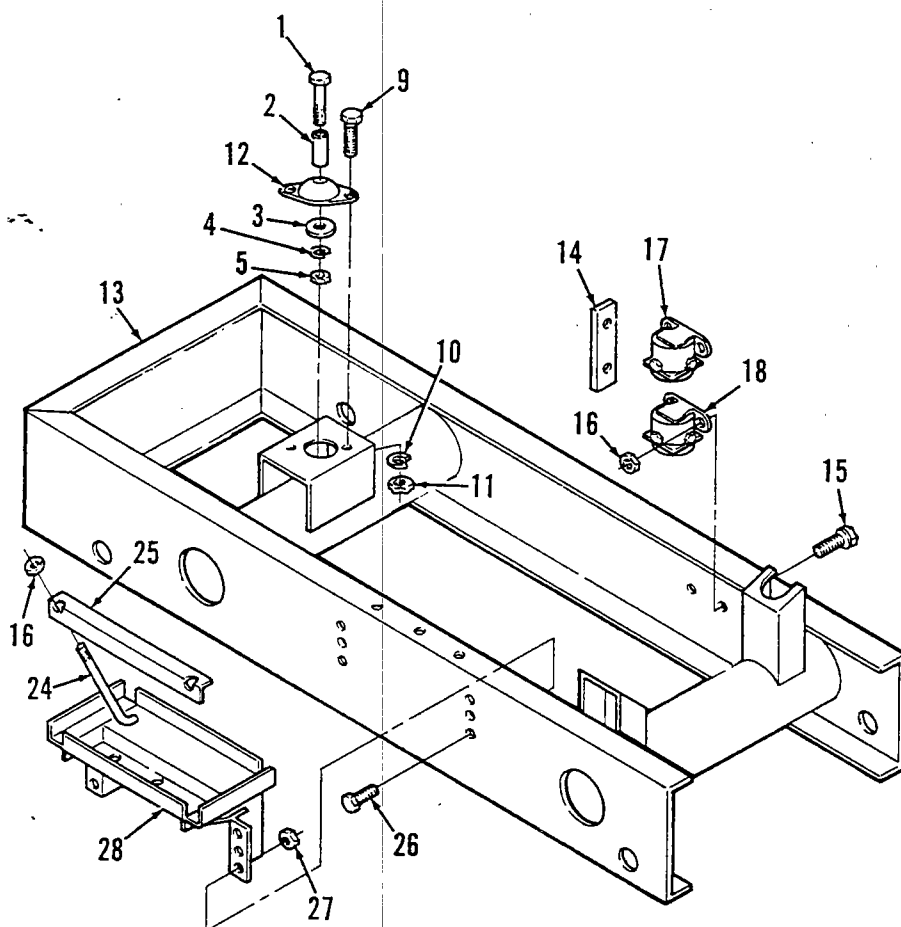
- 1**: Small cylindrical components, possibly valves or sensors, shown in two locations.
- 2**: Conical components, likely nozzles or tips, shown in two locations.
- 3**: Small rectangular components, possibly solenoids or actuators, shown in three locations.
- 4**: A small rectangular component, possibly a solenoid or actuator.
- 5**: A large cylindrical component, possibly a main body or housing.
- 6**: A vertical assembly with a cable, possibly a sensor or actuator.
- 7**: A circular component, possibly a cap or cover.
- 8**: A small cylindrical component, possibly a pin or plug.
- 9**: A small cylindrical component, possibly a pin or plug.
- 10**: A small rectangular component, possibly a solenoid or actuator.
- 11**: A small rectangular component, possibly a solenoid or actuator.
- 12**: The main rectangular housing or body of the device.
- 13**: A small rectangular component, possibly a solenoid or actuator.
- 14**: A small rectangular component, possibly a solenoid or actuator.
- 15**: A small rectangular component, possibly a solenoid or actuator.
- 16**: A small rectangular component, possibly a solenoid or actuator.
- 17**: A small rectangular component, possibly a solenoid or actuator.
- 18**: A small rectangular component, possibly a solenoid or actuator.
- 19**: A small rectangular component, possibly a solenoid or actuator.
- 20**: A small rectangular component, possibly a solenoid or actuator.
- 21**: Small cylindrical components, possibly pins or plugs, shown in multiple locations.
- 22**: A small cylindrical component, possibly a pin or plug.
- 23**: A small rectangular component, possibly a solenoid or actuator.
- 24**: A small rectangular component, possibly a solenoid or actuator.
- 25**: A long cylindrical component, possibly a tube or hose, shown in two locations.
- 26**: A small rectangular component, possibly a solenoid or actuator.
- 27**: A small rectangular component, possibly a solenoid or actuator.
- 28**: A small rectangular component, possibly a solenoid or actuator.

38

Day Tank

REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	501-0528	1	Line, Fuel - Flexible (45")	15	415-0326	1	Cover, Access - Relay
2	501-0491	1	Line, Fuel - Flexible (32")	16	812-0061	2	Screw, Machine - Round Head (#6-32 x 3/8")
3	502-0916	3	Elbow, Inverted Male - 90°	17	870-1183	2	Nut, Self-locking - Hex Washer Head With ET (#6-32)
4	502-0054	1	Elbow, Street - 90°	18	307-1157	1	Spring, Holddown - Relay
5	149-1828	1	Pump, Fuel (12 Volt DC)	19	307-1058	1	Relay (12 Volt DC)
6	415-0321	1	Switch, Float - Liquid Level (Includes Mounting Plug)	20	323-0765	1	Socket, Relay
7	159-0007	1	Cap, Fuel Tank	21	821-0014	12	Screw, Self-locking - Hex Washer Head (5/16-18 x 1/2")
8	505-0054	1	Plug, Pipe - Square Head (1/4")	22	402-0078	4	Mount, Vibration
9	505-0110	1	Plug, Pipe - Square Head (3/8")	23	415-0544	1	Bracket, Mounting
10	821-0013	2	Screw, Self-locking - Hex Washer Head (1/4-20 x 1")	24	870-0257	4	Nut, Self-locking - Hex Washer Head (5/16-18)
11	415-0451	1	Strap, Retaining - Tank	25	501-0492	1	Line, Fuel - Flexible (20")
12	415-0445	1	Tank, Fuel - Day (Includes Cap) (3-1/2 Gallons)	26	415-0545	2	Bracket, Support - Fuel Tank
13	813-0098	1	Screw, Machine - Round Head (#10-32 x 3/8")	27	821-0018	2	Screw, Self-locking - Hex Washer Head (1/4-20 x 5/8")
14	850-0030	1	Washer, Lock - Spring (#10)	28	870-0212	2	Nut, Self-locking - Hex Washer Head (1/4-20)

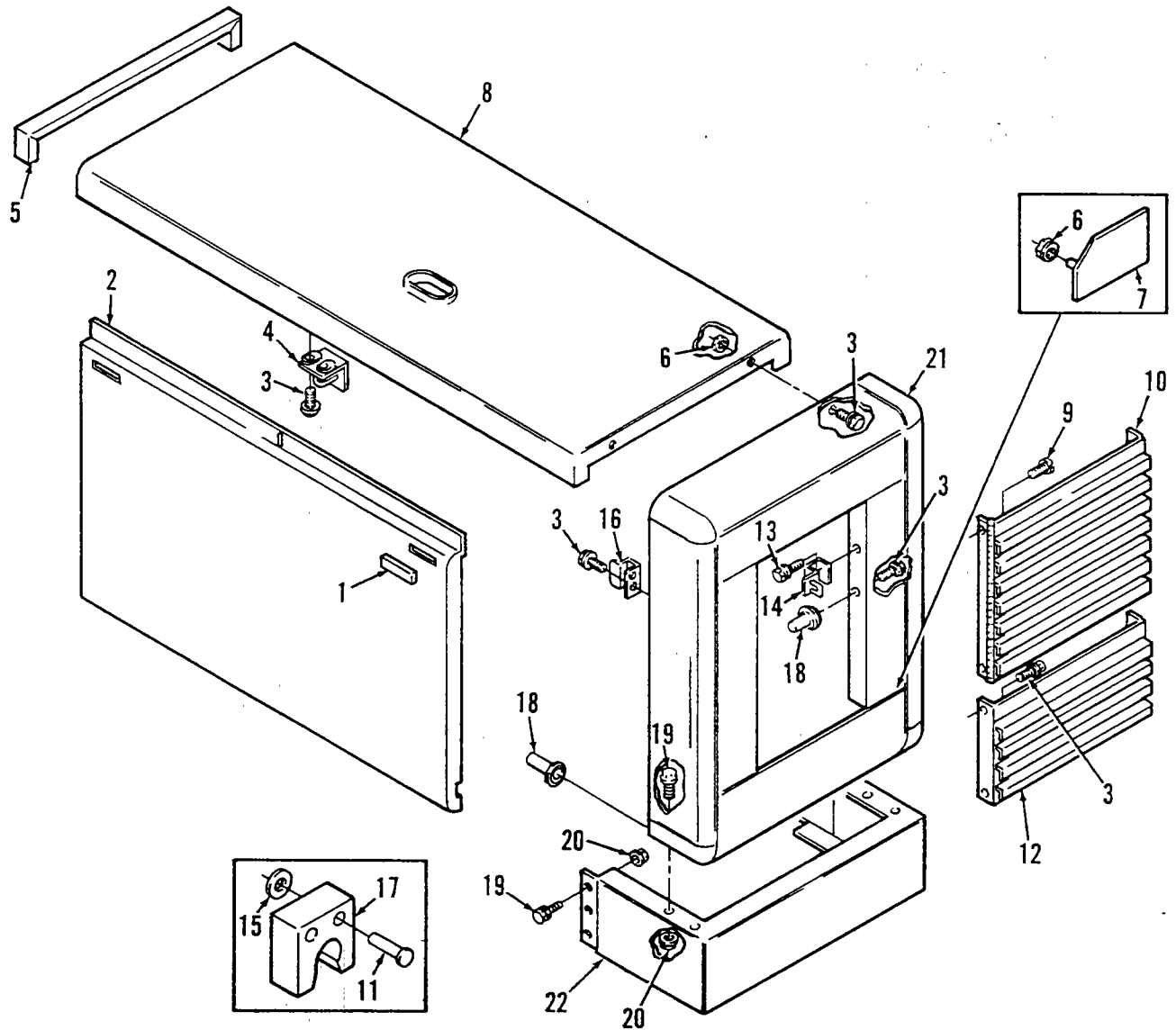
Chassis



REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	800-2126	1	Screw, Cap - Hex Head (M12 x 110 MM)
2	402-0542	1	Insert, Isolator
3	526-0172	1	Washer, Flat (1/2" ID x 2-1/4" OD x 1/4" Thk)
4	850-2012	1	Washer, Lock - Spring (M12)
5	860-2010	1	Nut, Hex (M12)
6	800-2186	2	Screw, Cap - Hex Head (M16 x 120 MM)
7	526-0242	2	Washer, Flat (11/16" ID x 2-7/8" OD x 1/4" Thk)
8	850-2066	2	Washer, Lock - Spring (M16)
9	800-2111	6	Screw, Cap - Hex Head (M12 x 25 MM)
10	850-2012	6	Washer, Lock - Spring (M12)
11	860-2010	6	Nut, Hex (M12)
12	402-0540	3	Mount, Vibration
13	403-2172	1	Skid
14	332-0602	1	Jumper, Solenoid
15	821-2036	5	Screw, Self-locking - Hex Washer Head (M6 x 30 MM)

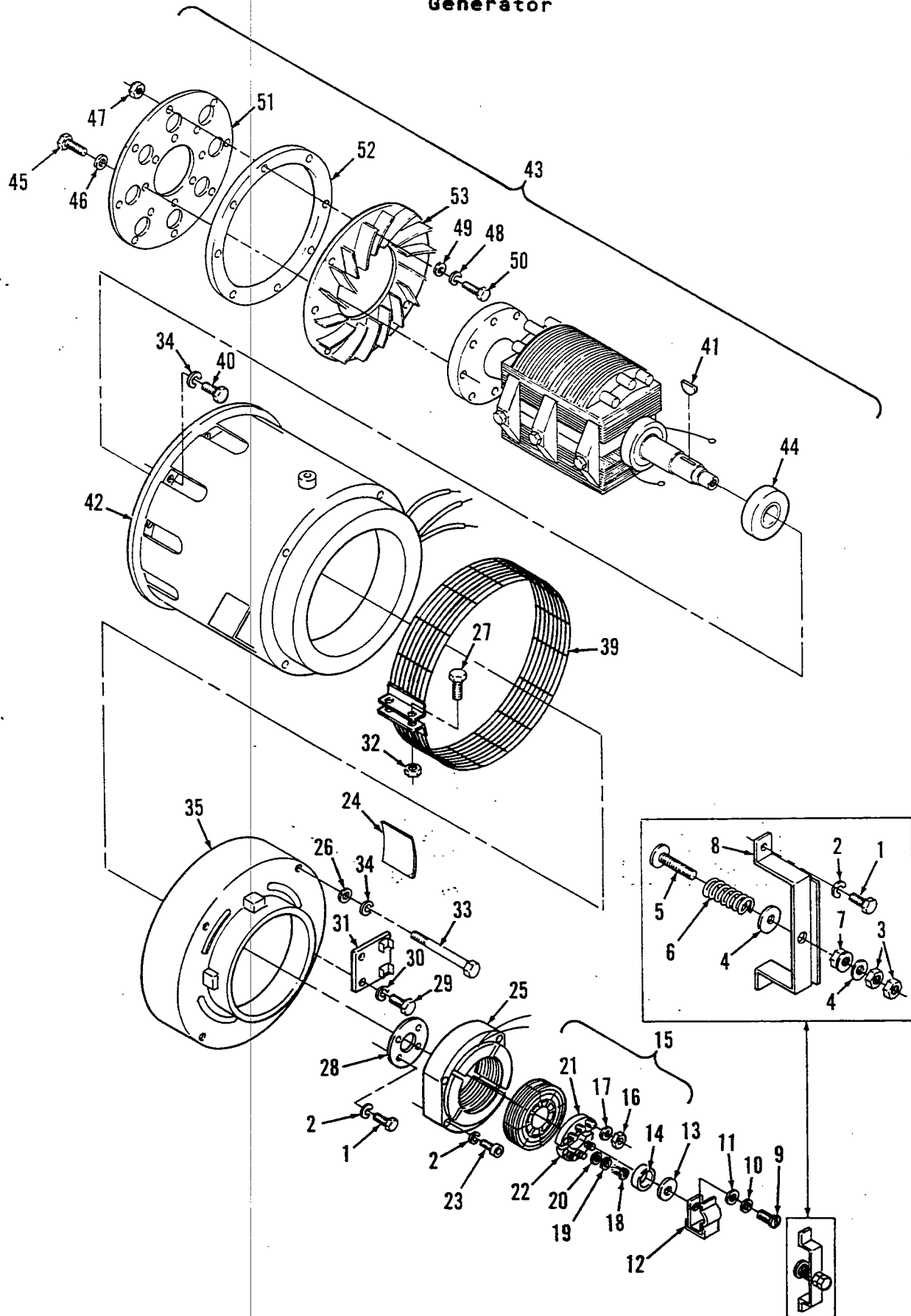
REF NO.	PART NO.	QTY USED	PART DESCRIPTION
16	870-2054	7	Nut, Self-locking - Hex Washer Head (M6)
17	307-1031	1	Relay, Solenoid - Heater (Upper) (K2)
18	307-1166	1	Relay, Solenoid - Start (Lower) (K1)
19	337-0090	1	Strap, Ground - Engine
20	853-2006	1	Washer, Lock - EIT (M6)
21	800-2110	1	Screw, Cap - Hex Head (M12 x 20 MM)
22	332-1473	1	Lug, Solderless
23	856-0013	1	Washer, Lock - EIT (1/2")
24	416-0828	2	Rod, J Hook (M6)
25	416-0830	1	Bracket, Holddown - Battery
26	821-2047	9	Screw, Self-locking - Hex Washer Head (M8 x 25 MM)
27	870-2055	9	Nut, Self-locking - Hex Washer Head (M8)
28	416-0847	1	Tray, Battery

Housing



REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	406-0561	4	Latch, Door	11	818-0150	8	Rivet
2	405-3229	2	Door, Engine	12	405-3082	1	Grille
3	821-2033	4	Screw, Self-locking - Hex Washer Head (M6 x 16 MM)	13	821-2020	2	Screw, Self-locking - Hex Washer Head (M5 x 12 MM)
4	406-0552	2	Latch, Door	14	406-0555	1	Latch, Cover
5	895-0195	-	Stripping, Weather - Bulk (Order by the foot - 7 foot required)	15	526-0003	8	Washer, Flat (#8)
6	870-2054	18	Nut, Self-locking - Hex Washer Head (M6)	16	406-0553	4	Catch, Door
7	405-3240	8	Support, Corner	17	405-1872	4	Clip, Door
8	405-3237	1	Panel, Top	18	870-2026	6	Nut, Weld (M6)
9	822-3073	3	Screw, Machine - Pan Head (M4 x 10 MM)	19	821-2061	11	Screw, Self-locking - Hex Washer Head (M10 x 25 MM)
10	405-2677	1	Cover, Control	20	870-2056	11	Nut, Self-locking - Hex Washer Head (M10)
				21	405-3242	1	Panel, Rear
				22	403-2168	1	Skid, Rear

Generator



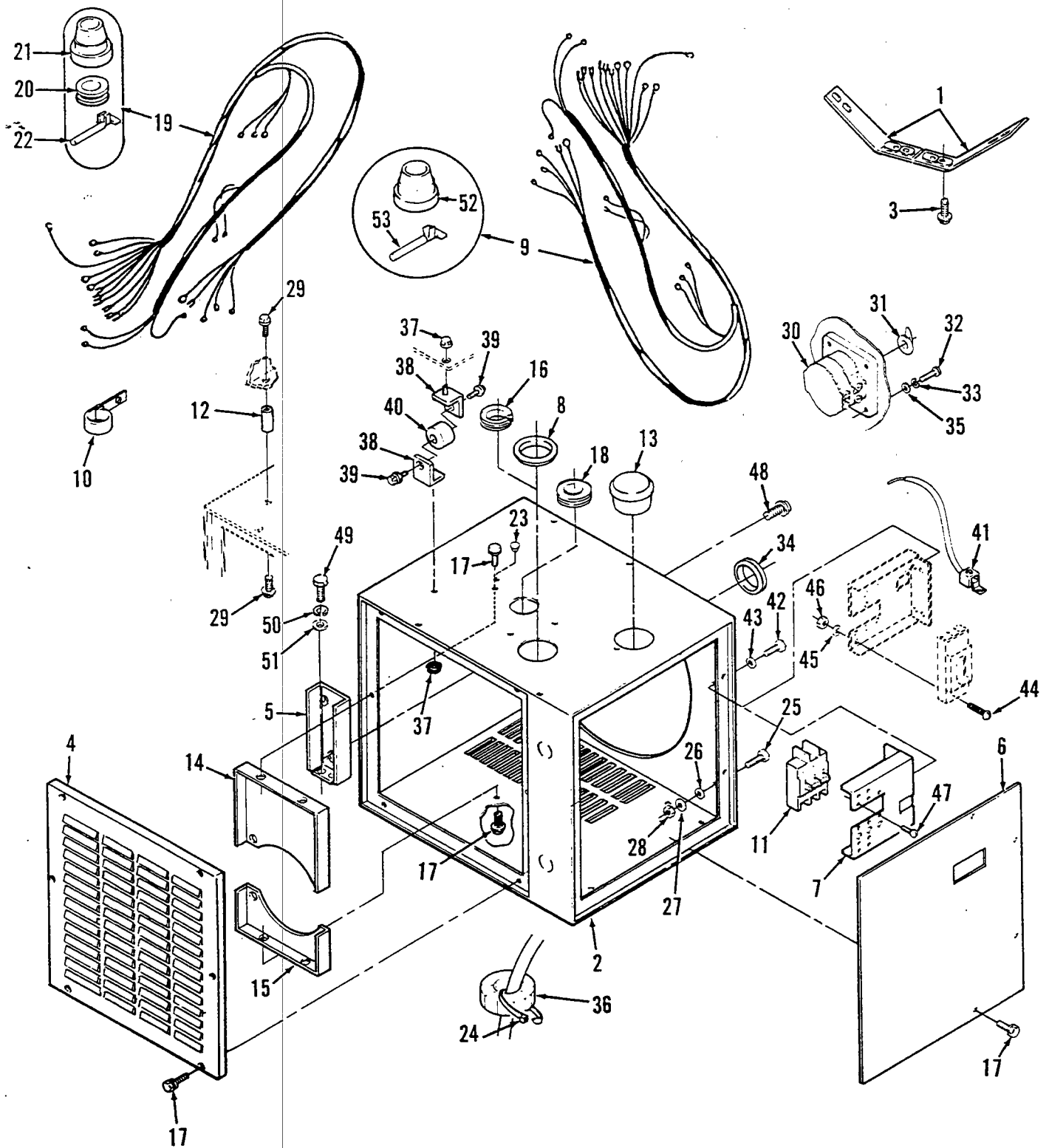
Generator

REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	800-2029	6	Screw, Cap - Hex Head (M6 x 12 MM)	28	232-2959	1	Cover, Bearing
2	850-2006	10	Washer, Lock - Spring (M6)	29	800-2004	2	Screw, Cap - Hex Head (M5 x 12 MM)
3	860-2006	2	Nut, Hex (M5)	30	850-2005	2	Washer, Lock - Spring (M5)
4	526-2060	2	Washer, Flat (M5)	31	232-2418	1	Board, Terminal
5	150-1962	1	Point, Contact	32	870-0212	2	Nut, Hex (1/4-20)
6	150-1964	1	Spring	33	800-2100	4	Screw, Cap - Hex Head (M10 x 100 MM)
7	870-0171	1	Nut, Insulating	34	850-2010	16	Washer, Lock - Spring (M10)
8	150-1963	1	Bracket, Mounting	35	211-0367	1	Bell, End
9	720-1057	1	Screw, Cap - Hex Head (M10 x 40 MM)	39	234-0819	1	Screen, Fan
10	853-2010	1	Washer, Lock - ET (M10)	40	800-2088	12	Screw, Cap - Hex Head (M10 x 35 MM)
11	526-2120	3	Washer, Flat (M10)	41	515-0158	1	Key - Exciter Rotor
12	150-2038	1	Switch, Overspeed	42			Stator, Generator
13	526-2129	1	Washer, Flat (11 MM ID x 45 MM OD x 5 MM Thk)		220-4064	1	Code 9XR
14	232-2929	1	Spacer, Exciter		220-3814	1	Code 15R
15	201-2299	1	Rotor Assembly, Exciter (Includes Parts Marked *)		220-3857	1	Code 515R
16	870-0131	6	*Nut, Self-locking - Hex With ET Lockwasher (#10-32)	43	201-3099	1	Rotor Assembly, Generator (Includes Parts Marked #)
17	526-0008	6	*Washer, Flat (#10)	44	510-0063	1	#Bearing, Ball
18	813-0100	4	*Screw, Machine - Round Head (#10-32 x 1/2")	45	800-2112	8	#Screw, Cap - Hex Head (M12 x 30 MM)
19	853-0008	4	*Washer, Lock - ET (#10)	46	526-2148	8	#Washer, Flat (M12)
20	526-0008	4	*Washer, Flat (#10)	47	860-2009	8	#Nut, Hex (M10)
21	358-0069	1	*Rectifier Assembly - Positive	48	850-2010	8	#Washer, Lock - Spring (M10)
22	358-0070	1	*Rectifier Assembly - Negative	49	526-2121	8	#Washer, Flat (M10)
23	802-2073	4	Screw, Cap - Socket Head (M6 x 45 MM)	50	800-2533	8	#Screw, Cap - Hex Head (M10 x 55 MM)
24	508-0239	-	Edging - Bulk (Order by the foot - 1 foot required)	51	232-3071	1	#Disk, Drive
25	220-3968	1	Stator, Exciter	52	232-3082	1	#Spacer
26	526-2121	4	Washer, Flat (#10)	53	205-0161	1	#Fan
27	800-0012	2	Screw, Cap - Hex Head (1/4-20 x 1-3/4")				

* - Parts Included in 201-2299 Exciter Rotor Assembly

- Parts Included in 201-3099 Generator Rotor Assembly

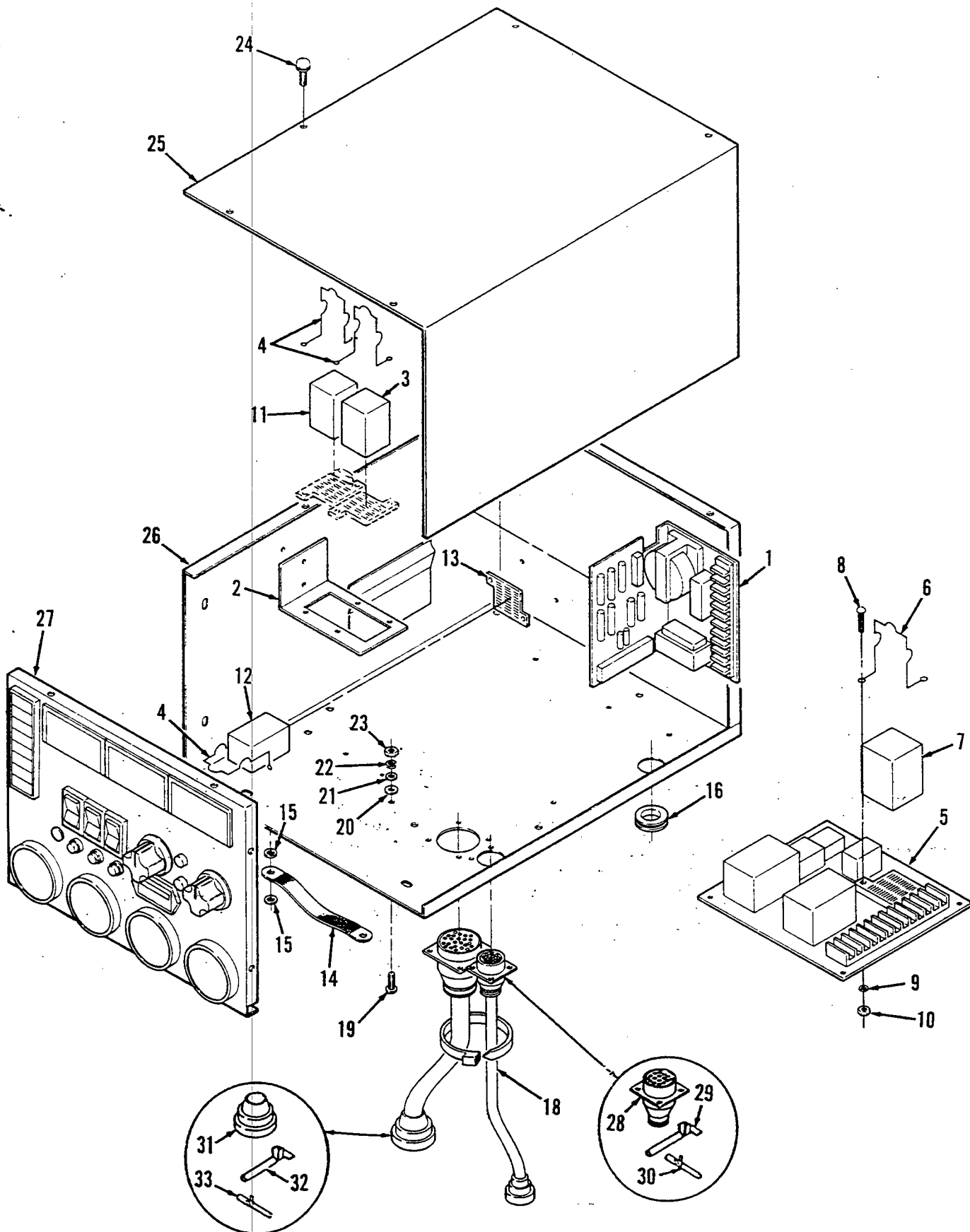
Output Box



Output Box

REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1	301-9037	2	Bracket, Support - Output Box - Used on some early models	23	517-0169	4	Plug, Plastic - 3/8" Hole Spec A
2	301-8113	1	Box, Output Spec A		517-0169	12	Spec B
	301-8978	1	Spec B	24	332-0941	3	Tie, Cable
3	821-2045	4	Screw, Self-locking - Hex Washer Head (M8 x 16 MM)	25	800-2035	1	Screw, Cap - Hex Head (M6 x 25 MM) Grounding Stud
4	301-8112	1	Grille	26	856-0006	1	Washer, Lock - EIT (1/4")
5	301-9038	1	Bracket, Output Box	27	850-2006	2	Washer, Flat (M6)
6	301-8114	1	Cover Without Circuit Breaker Opening	28	860-2007	2	Nut, Hex (M6)
			With Circuit Breaker Opening	29	821-0014	8	Screw, Self-locking - Hex Washer Head (5/16-18 x 1/2") Spec A
	301-8896	1	Use With Westinghouse and General Electric Circuit Breakers	30	308-0770	1	Switch, Tap - Dual Phase Selector (Includes Knob and Mounting Hardware)
	301-8898	1	Use With Heineman Circuit Breakers	31	303-0218	1	Knob
7	301-7572	1	Bracket, Mounting - Circuit Breaker	32	812-0153	4	Screw, Machine - Round Head (1/4-20 x 1")
8	508-0257	1	Grommet, Plastic - 3-1/2" Hole	33	850-0040	4	Washer, Lock - Spring (1/4")
9	338-1647	1	Harness, Wiring - Generator to Control (Includes Plug and Pins)	34	508-0055	1	Grommet, Rubber - 1-3/4" Hole
10	332-1356	3	Clamp, Insulated - DC Wiring Harness	35	526-0052	4	Washer, Flat (1/4")
11			Breaker, Circuit (CB4 or CB5)	36			Transformer, Current (CT21, 22, 23)
	320-0645	1	Voltage Code 15R 50 Amp, 480 Volt		302-0076	3	All Except Voltage Code 9XR (Ratio 75/5, 1VA)
	320-0701	1	100 Amp, 240 Volt		302-0117	3	Voltage Code 9XR (Ratio 50/5, 1VA)
	320-1049	1	125 Amp, 240 Volt	37	870-0257	8	Nut, Self-locking - Hex Washer Head (5/16-18) Spec B
	320-0344	1	175 Amp, 240 Volt	38	301-8955	8	Bracket - Spec B
	320-0384	1	Voltage Code 515R - 60 Amp, 480 Volt	39	821-0014	8	Screw, Self-locking - Hex Washer Head (5/16-18 x 1/2") Spec B
12	402-0070	4	Dampener, Vibration - Spec A	40	402-0527	4	Isolator, Vibration - Spec B
13	517-0190	1	Plug, Plastic - 3-1/2" Hole	41			Lead, Generator Output Extension
14			Bracket - Upper		226-3423	2	Two Pole Breakers
	301-8110	1	Spec A		226-3423	3	Three Pole Breakers
	301-8951	1	Spec B	42	800-0003	2	Screw, Cap - Hex Head (1/4-20 x 1/2")
15			Bracket - Lower	43	850-0040	2	Washer, Lock - Spring (1/4")
	301-8109	1	Spec A	44	812-0094	4	Screw, Machine - Round Head (#8-32 x 3-5/8")
	301-8952	1	Spec B	45	850-0025	4	Washer, Lock - Spring (#8)
16	508-1010	1	Channel, Rubber - Used on some early models	46	860-0008	4	Nut, Hex (#8-32)
17	821-2032	14	Screw, Self-locking - Hex Washer Head (M6 x 12 MM)	47	812-0063	6	Screw, Machine - Round Head (#6-32 x 1/2")
18	508-0051	1	Grommet, Rubber - 2" Hole (Spec B)	48	821-2045	3	Screw, Self-locking - Hex Washer Head (M8 x 16 MM)
19	338-1711	1	Harness, Wiring - Engine to Control (Includes Grommet, Plug and Sockets)	49	800-2054	2	Screw, Cap - Hex Head (M8 x 14 MM)
20	508-0258	1	Grommet, Rubber - 1-1/2" Hole	50	850-2008	2	Washer, Lock - Spring (M8)
21	323-1134	1	Plug, Circular (16 Pin) (P1)	51	526-2101	2	Washer, Flat (M8)
22			Socket, Female	52	323-1136	1	Plug, Circular (14 Pin) (P2)
	323-1192	4	14-12 Gauge Wire	53	323-1228	11	Pin, Male
	323-1195	10	18-14 Gauge Wire				

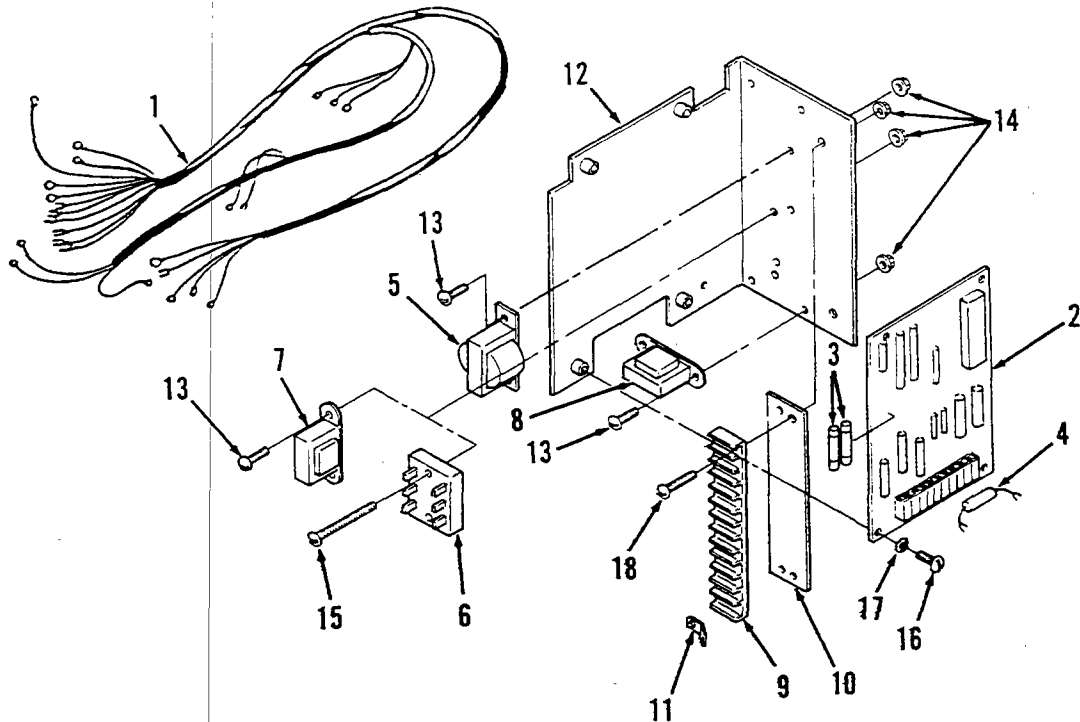
Control



Control

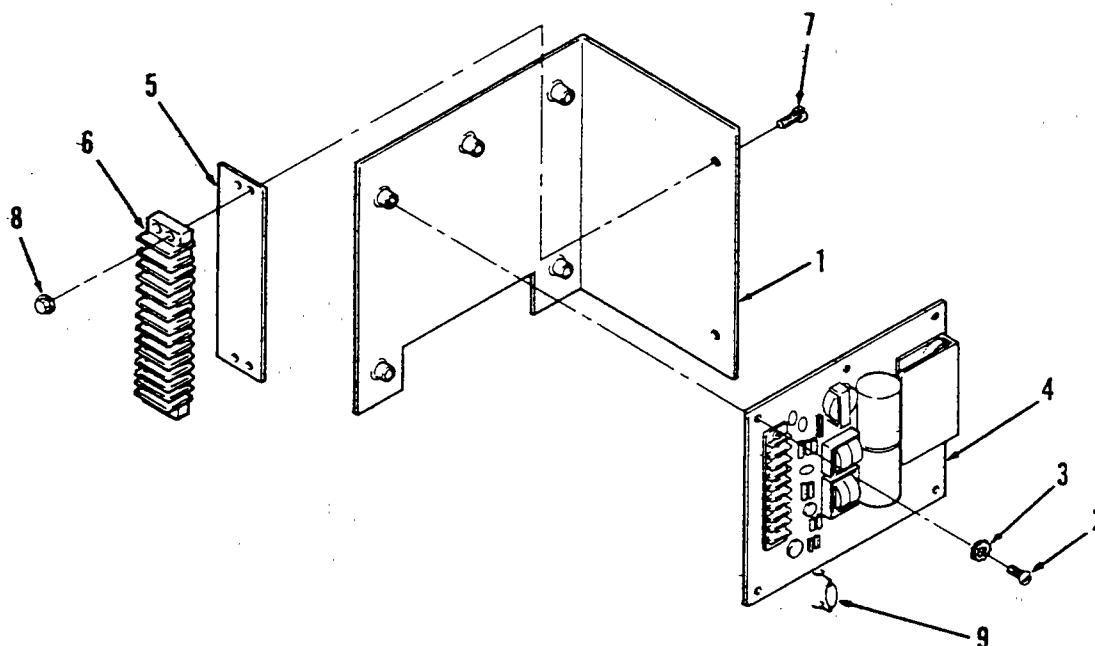
REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1			Regulator Assembly, Voltage (See Separate Page for Components)	18	338-1427	1	Harness, Wiring - Remote Control (30')
	305-0693-01	1	Standard (VRA21)	19	815-0105	1	Screw, Machine - Round Head (Brass) (#10-32 x 1")
	305-0693-02	1	Fixed Resistor				Grounding Stud
			External Adjust	20	526-0063	2	Washer, Flat - Brass (#10)
	305-0695-01	1	Switching Regulator (VRA21)	21	856-0003	2	Washer, Lock - EIT (#10)
	305-0695-02	1	Fixed Resistor	22	851-0001	1	Washer, Lock - Spring (Brass) (#10)
	305-0737	1	External Adjust	23	871-0010	2	Nut, Hex - Brass (#10-32)
2			Standard (VRAS-2)	24	821-0005	5	Screw, Self-Locking - Hex Washer Head (#10-32 x 1/2")
	301-3244	1	Bracket, Mounting - Relay	25	301-5150	1	Cover, Control
	301-7334	1	One Socket Hole	26	301-6230	1	Box, Control
3	307-1061	1	Two Socket Holes	27	-	1	Panel, Control (See Separate Page for Components)
4	307-1157	3	Relay - Start (K11)	28			Receptacle - Square Flange
5			Spring, Holddown - Relay		323-1137	1	14 Pin (J2)
			Monitor Assembly, Engine (Includes Replaceable Relay and Spring) (A11)		323-1135	1	16 Pin (J1)
	300-2510	1	Two Light Monitoring System (Standard)	29	323-1229	11	Socket, Female - Used With 14 Pin Receptacle
	300-2453-04	1	Nine Light Monitoring System	30			Pin, Male - Used With 16 Pin Receptacle
6	307-1157	1	Spring, Holddown - Relay		323-1193	4	16-12 Gauge Wire
7	307-1687	1	Relay (A11K1)		323-1194	12	18-14 Gauge Wire
8	812-0061	2	Screw, Machine - Round Head (#6-32 x 3/8")	31			Plug - Circular
9	854-0006	2	Washer, Lock - IT (#6)		323-1136	1	14 Pin (P2)
10	860-0006	2	Nut, Hex (#6-32)		323-1134	1	16 Pin (P1)
11	307-1061	1	Relay - Voltage Selector (K21)	32			Socket, Female - Used With 16 Pin Plug
12	307-1058	1	Relay - Run (K12)		323-1192	4	14-12 Gauge Wire
13	323-0804	1	Socket, Relay (K12)		323-1195	12	18-14 Gauge Wire
14	337-0049	1	Strap, Ground	33	323-1194	11	Pin, Male - Used With 14 Pin Plug
15	856-0008	2	Washer, Lock - EIT (5/16")				
16	508-0144	1	Grommet, Rubber (1" Hole)				

Voltage Regulator Assembly (VRA21)



REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
			Regulator Assembly, Voltage - Complete	7	315-0343	1	Reactor - Used on Switching Voltage Regulator Assemblies (VRA21L22)
			Standard	8	315-0343	1	Reactor (VRA21L21)
	305-0693-01	1	Fixed Resistor	9	332-0607	1	Block, Terminal (VRA21TB2)
	305-0693-02	1	External Adjust	10	332-2373	1	Strip, Marker
			Switching Regulator	11	332-2387	4	Terminal, Tab - Used on Standard Voltage Regulator Assemblies
	305-0695-01	1	Fixed Resistor				
	305-0695-02	1	External Adjust	12	301-5736	1	Panel, Mounting
1			Harness, Wiring	13			Screw, Machine - Round Head (#6-32 x 3/8")
	338-1443	1	Standard Regulator		812-0061	4	Standard Voltage Regulator Assemblies
	338-1670	1	Switching Regulator		812-0061	6	Switching Voltage Regulator Assemblies
2			Board, Voltage Regulator (VR21)	14	870-0183	8	Nut, Self-Locking - Hex Head With ET Lockwasher (#6-32)
	332-2045	1	Standard Regulator (Includes Fuses)	15	812-0070	2	Screw, Machine - Round Head (#6-32 x 1-1/4") Used on Standard Voltage Regulator Assemblies
	300-2409	1	Switching Regulator	16	812-0059	4	Screw, Machine - Round Head (#6-32 x 1/4")
3	321-0204	2	Fuse (1/4 Amp) Used With Standard Voltage Regulator Board (VR21F2,F3)	17	853-0003	4	Washer, Lock - ET (#6)
4	350-1190	1	Resistor - Fixed (1740 Ohms, 1/2 Watt) Used on Voltage Regulator Assemblies Without External Adjust (VRA21R21)	18	812-0065	2	Screw, Machine - Round Head (#6-32 x 5/8")
5	315-0431	1	Transformer (VRA21T21)				
6	305-0524	1	Bridge, Rectifier - Used on Standard Voltage Regulator Assemblies (VRA21CR21)				

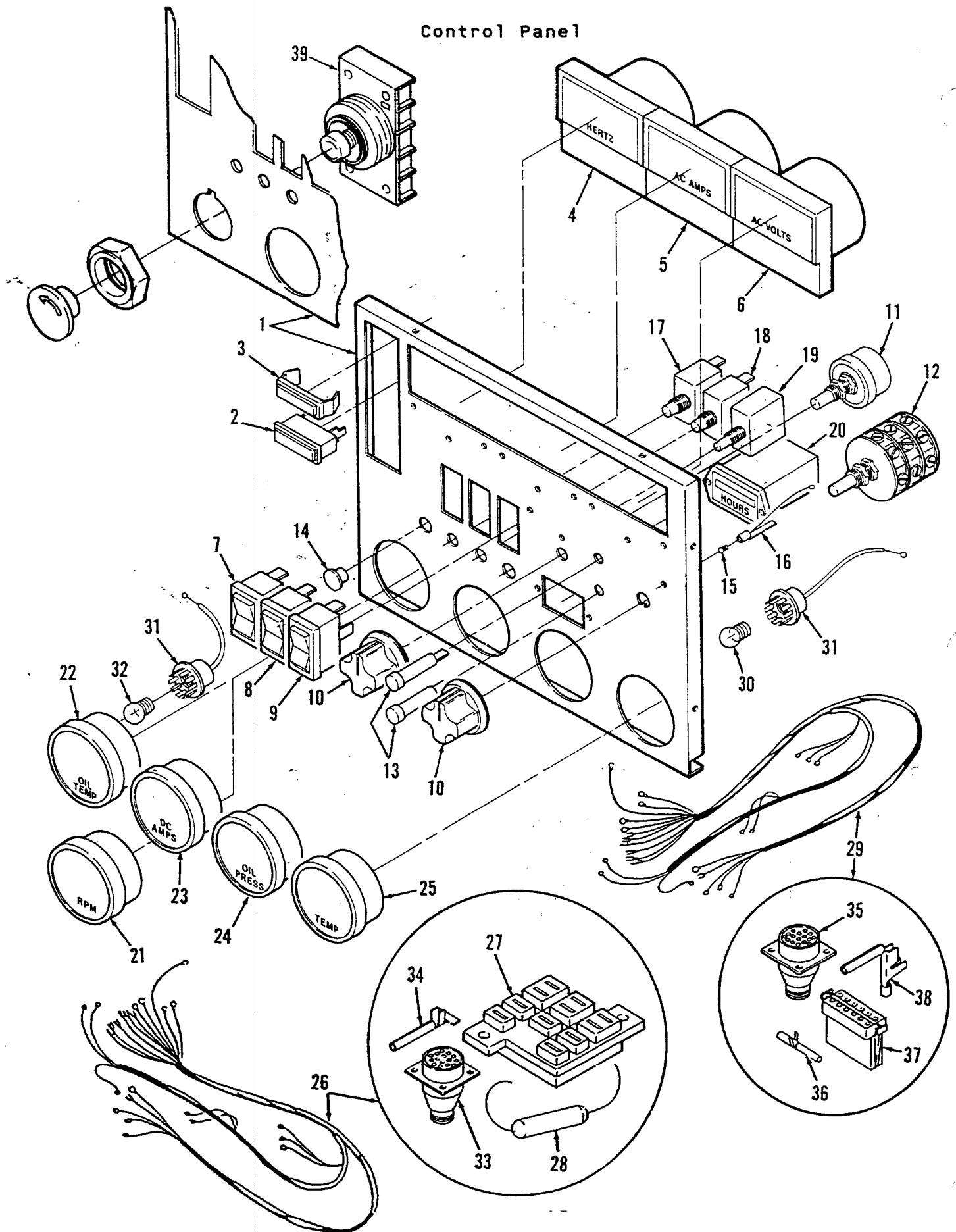
Voltage Regulator Assembly (VRAS-2)



REF NO.	PART NO.	QTY USED	PART DESCRIPTION
	305-0737	1	Regulator Assembly, Voltage - Complete
1	301-9334	1	Panel, Mounting
2	812-0059	5	Screw, Machine - Round Head (#6-32 x 1/4")
3	853-0003	5	Washer, Lock - ET (#6)
4	300-2880	1	Board, Voltage Regulator (VR21)
5	332-2373	1	Strip, Marker

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
6	332-0607	1	Block, Terminal (VRAS-2TB2)
7	812-0065	2	Screw, Machine - Round Head (#6-32 x 5/8")
8	870-0183	2	Nut, Self-Locking - Hex Head With ET Lockwasher (#6-32)
9	350-0394	1	Resistor - Fixed (2000 Ohms, 1/2 Watt) Used on Voltage Regulator Assemblies Without External Adjust (VRAS-2R21)

Control Panel



Control Panel

REF NO.	PART NO.	QTY USED	PART DESCRIPTION	REF NO.	PART NO.	QTY USED	PART DESCRIPTION
1			Panel, Control	19			Breaker, Circuit - Field
	301-7348-01	1	Panel Without AC Meters				Used With VRA21 Voltage
	301-7348-02	1	Panel With Three Round Gauge Holes	320-1138	1		Regulator Assembly
			Panel With Four Round Gauge Holes	320-0530	1		3 Amp (Dual - CB3,CB4)
			Panel With AC Meters	320-1121	1		5 Amp (CB3)
			Panel With Three Round Gauge Holes				Used With VRAS-2 Voltage
301-7349-01	1		Without Emergency Stop Switch	20	302-0885	1	Regulator Assembly - 3 Amp (CB3)
301-9498	1		With Emergency Stop Switch	21	302-1715	1	Meter, Time Totalizing (M4)
301-7349-02	1		Panel With Four Round Gauge Holes	22	193-0330	1	Tachometer (Includes Socket and Lamp (M5))
2			Light, Indicator (14VDC)	23	302-1402	1	Gauge, Oil Temperature (M5)
			Controls With Two Light Monitoring System	24	193-0352	1	Ammeter - DC (M1)
322-0238	1		RUN - Green (DS1)	25	193-0351	1	Gauge, Oil Pressure (M2)
322-0128	1		FAULT - Red (DS2)	26			Gauge, Water Temperature (M3)
			Controls With Nine Light Monitoring System				Harness, Wiring - AC
322-0238	1		RUN - Green (DS1)				(Includes Socket for K11
322-0110	1		LO ENG TEMP - Red (DS2)	338-1642-03	1		Start Relay, Receptacle and Sockets)
322-0109	1		HI ENG TEMP - Red (DS3)				Controls Without AC Meters
322-0108	1		LO OIL PRES - Red (DS4)	338-1642-01	1		Controls With AC Meters
322-0111	1		OVERSPEED - Red (DS5)				All Except Voltage Code
322-0107	1		OVER CRANK - Red (DS6)				9XR (Also Includes Resistor and Socket for K21 Voltage Selector Relay)
322-0240	1		PRE HI ENG TEMP - Amber (DS7)	338-1642-04	1		Voltage Code 9XR
322-0241	1		PRE LO OIL PRESS - Amber (DS8)	27	323-0765	2	Socket, Relay (For K11,K21 Relays)
322-0283	1		SWITCH OFF - Red (DS9)	28	350-0556	1	Resistor, Fixed - 47K Ohm, 1/2 Watt (K21R22)
3	322-0141	7	Lens, Indicator Light (No Legend or Lamp) Controls With Two Light Monitoring System	29			Harness, Wiring - DC
4			Meter, Frequency - AC (M21)				(Includes Receptacle, Pins, Plug and Sockets, where required.)
302-1273	1		50 Hertz	338-1643-01	1		Meters
302-1153	1		60 Hertz	338-1644	1		Switches
5			Ammeter - AC (M23)	338-1646	1		Indicator Lights
302-1147	1		All Except Voltage Code 9XR	338-1645	1		Controls With Two Light Monitoring System
302-1298	1		Voltage Code 9XR				Controls With Nine Light Monitoring System
6			Voltmeter - AC (M22)	30	322-0308	3	Lamp, Pilot (DS10,DS11,DS12)
302-1148	1		All Except Voltage Code 9XR	31	322-0210	4	Socket, Lamp
302-1300	1		Voltage Code 9XR	32	322-0004	1	Lamp, Pilot (DS13)
7			Switch, Push (Remote, Stop, Start) (S10)	33	323-1137	1	Receptacle - Square Flange (14 Pin) (P2)
308-0531	1		Controls With Two Light Monitoring System	34			Socket, Female
			Controls With Nine Light Monitoring System	323-1229	11		Used With 338-1642-01 Wiring Harness
308-0620	1		Standard	323-1229	5		Used With 338-1642-03 Wiring Harness
308-0624	1		Pennsylvania State Approved	323-1229	10		Used With 338-1642-04 Wiring Harness
8	308-0533	1	Switch, Push - Pre Heat (S11)	35	323-1135	1	Receptacle - Square Flange (16 Pin) (P1) Used With 338-1643-01 Wiring Harness
9	308-0532	1	Switch, Push - Lamp Test (S12)	36			Pin, Male - Used With 323-1137 Receptacle
10	303-0032	2	Knob				16-12 Gauge Wire
11			Potentiometer - 25 Watt (R23)	323-1193	3		18-14 Gauge Wire
303-0170	1		Used With VRA21 Voltage Regulator Assembly With External Adjust	323-1194	10		Plug, Connector (12 Pin) (J1, J2, J3) Used With 338-1643-01, 338-1644 and 338-1645 Wiring Harnesses
303-0261	1		Used With VRAS-2 Voltage Regulator Assembly With External Adjust	37	323-0984	3	Socket, Male (Side Feed)
12	308-0284	1	Switch, Rotary - Voltmeter/Ammeter (S21)	38			Used With 338-1643-01 Wiring Harness
13	322-0211	2	Light, Pilot (DS21,DS22)	323-0488	8		Used With 338-1644 Wiring Harness
14	517-0132	1	Plug, Hole	323-0488	10		Used With 338-1645 Wiring Harness
15	322-0203	2	Lamp (DS14,DS15)				
16	322-0213	2	Lampholder	39	308-0813-01	1	Switch, Push - Emergency Stop (S13) Includes Knob and Mounting Hardware
17	320-1110	1	Breaker, Circuit - Remote - 7 Amp (CB1)				
18	320-1110	1	Breaker, Circuit - Control - 7 Amp (CB2)				

Paint and Thread Sealant

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
	525-0305	-	Paint, Green - Enamel (13 oz. Pressurized Spray Can)
	518-0452	-	Sealant, Thread (50 cc Bottle)